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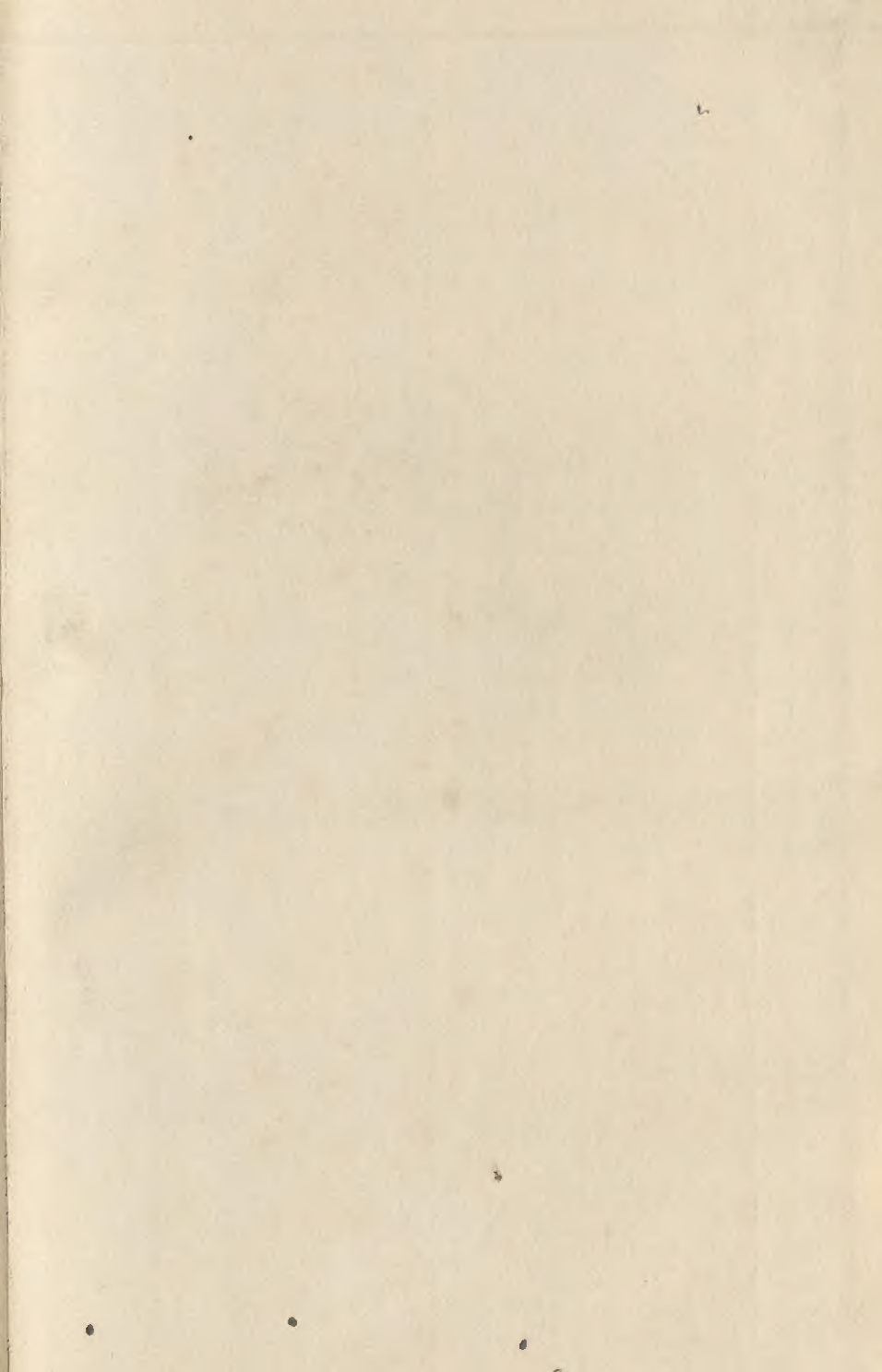
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Educational Testing



PROFESSIONAL GUIDANCE SERIES

Under the Editorship of CLIFFORD P. FROEHLICH

STUDYING STUDENTS

OCCUPATIONAL INFORMATION

COUNSELING ADOLESCENTS

Studying Students

GUIDANCE METHODS OF INDIVIDUAL ANALYSIS

BY CLIFFORD P. FROEHLICH, ED. D.

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CHICAGO

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THE GEOGRAPHICAL PUBLISHING CO., DE KALB, ILLINOIS

TO

E. P. F. and K. M.C.C. D.

For their help and forbearance

while we built the book

Chapters 4 through 8. Although these chapters describe techniques ordinarily neglected in traditional tests and measurements courses, the authors believe that an understanding of such techniques is requisite to the proper use of tests.

Like its predecessors in the Professional Guidance Series, *Counseling Adolescents*, by Hamrin and Paulson, and *Occupational Information*, by Baer and Roeber, this volume deals exclusively with a well-defined area of guidance workers' preparation. It complements and in no way overlaps other volumes in the series, which is planned to cover systematically the fields of preparation recommended by the Joint Committee on Counselor Preparation.

CLIFFORD P. FROELICH

Editor, Professional Guidance Series

Author's Acknowledgments

IN 1943, *Testing and Counseling in the High School Guidance Program* was published by Science Research Associates. Somewhat to my surprise, and the surprise of the publishers, this volume had a modest success then and over the intervening years. It was the product of both experience and conviction. On the basis of considerable work with high-school teachers, I was convinced that one omnibus and self-contained discussion of the fundamentals of testing and counseling had a place in the literature, even though it could not deal intensively with all aspects of its dual topic. It was written largely for the high-school teacher whose testing and counseling skills had to be learned primarily *on the job* and who therefore needed, I felt, a short and fairly basic discussion of these skills in order to establish a foundation on which to build summer school course work and direct experiences in the school. To what extent this hope was realized, I cannot say. Certainly my conviction regarding the need was real.

It is of some historical interest that the last chapter of that earlier book was written by a young man who had been in my graduate classes and who had, on my recommendation, taken a pioneering position in Fargo, North Dakota, which involved the building of a community-wide, and ultimately a state-wide guidance program. Clifford Froehlich now occupies a major position in the field of guidance on the staff of the University of California (Berkeley) and is himself author or co-author of important contributions to the literature of guidance. His teaching experience and field experience by now exceed my own.

He serves also as editor of Science Research Associates' series of basic texts known as the Professional Guidance Series.

Thus when a revision of my earlier book was proposed, my feelings were mixed. On the one hand, I was honored that Mr. Froehlich was willing to accept me as a possible collaborator; on the other hand, I was appalled at the rapid strides in the field of guidance that might warrant such an intensive treatment of one phase alone—individual analysis—and fearful of the task of bringing my own knowledge up to date, since my present work has effectively removed me from intimate contact with guidance programs. The resolution of this problem was simple: the honor of collaboration remains mine; Mr. Froehlich did most of the work and is deservedly listed as senior author of this joint enterprise.

The reasons advanced by Mr. Froehlich for the revision had considerable cogency in persuading me to agree to his offer to undertake the job as part of his work with the Professional Guidance Series. They can be briefly noted. The professional preparation of teachers should inevitably include methods of studying students. Too often this means only a single course in tests and measurements; but insufficient attention is paid to the use of observation, personal documents, interviews. Yet these latter procedures are more readily available and more frequently used than are tests in many schools. Thus a need exists for incorporating such methods into the basic framework of teacher training, and making explicit their relation to other analytic methods.

It is additionally relevant that the materials presented in this revision have stood the test of classroom use in discussions and supervised practice with case history materials, role-playing and student-counselor situations, and handling of actual student cases. In an orderly progression of learning experiences, from the purchase of specimen sets of tests to the full working up of a case, these methods of studying students are all involved, prior to the actual experience of counseling with students, in the sense of therapy or aid in problem-solving. So complex is the task of analyzing an individual that it seems necessary to devote a good deal of attention to methods of analysis.

For reasons such as these, the present volume is much more than a revision of my earlier book. It contains material not previously included and it omits material that is more adequately treated elsewhere. For this reorganization, Mr. Froehlich deserves major credit.

As is always the case, we are indebted to many persons for their assistance. James Mendenhall, book editor for Science Research Associates, did much to improve the manuscript. Ramon Charles, Kansas State Supervisor of Guidance Services, reviewed critically Chapters 2 and 3. Edna Froehlich typed the endless revisions of the manuscript with patience and efficiency. Other authors and publishers have been most generous in granting permission to quote from their material. Certainly we continue our indebtedness to the many teachers who have come to our classes as students and have helped us to see the problems of their daily working situation. Without their help we could not have accomplished our task. We would hope that this book proves of use to them, for theirs is the major responsibility if our schools are to be strong and effective.

JOHN G. DARLEY



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What We Must Know about Students

THIS BOOK is concerned with the problems of understanding boys and girls as individuals. It describes ways of obtaining a better knowledge of them than can be secured through casual observations or pat descriptions. Desirable techniques for getting information about individuals are essentially analytical devices. Their use enables teachers and counselors to study the student in order to arrive at a deeper understanding of him than is found in such expressions as "John is a good student," or "David is a trouble-maker." This process of analyzing the individual is primarily one of collecting and interpreting data. When skillfully done, it helps teachers and counselors to understand more clearly the boys and girls with whom they work.

Although the phrase, "analysis of the individual," may have a calculating sound, the process is not merely a quantitative one. In fact, general "hunches" and feelings may sometimes contribute as much to the conclusions a counselor draws as do quantitative data. To understand a boy or girl, counselors and teachers need both quantitative and qualitative data.

Analyzing an individual is more than regarding that person as the sum of separate quantitative measures. Quantitative information, such as the statement that "John's mental age is 12.3 years," or that "Mary reads at the level of beginning seventh-grade students," has definite meaning, but these facts must be interpreted in the light of other information about the individual. Thus, while the importance of collecting quantitative data about an individual cannot be denied, the necessity of collecting other information about him must also be recog-

nized. And when the data are collected, they must be interpreted if one is to understand the individual. Determining the significance of these data is an essential step in understanding a boy or girl. Analysis of the individual, therefore, is a dual process: collecting facts and interpreting or understanding them.

ANALYZING THE INDIVIDUAL IS A KEY GUIDANCE SERVICE

At the outset, it is important to recognize the way in which analysis of the individual fits into the guidance picture. All education should begin with the analysis of students. The expression, "Start where the students are," is familiar to everyone. But in teaching, unfortunately, all too many educators seem to think that this expression means starting at the beginning of the course or at the beginning of a grade. We have assumed that students enrolling for elementary algebra know no algebra; therefore, we have always started at the beginning of the book. We have also assumed that pupils in algebra should follow exactly the course of study for that subject. Many educators question such teaching practices; instead, they emphasize another approach. These educators, for instance, recommend that the teacher give an achievement test at the beginning of the school year in order to determine each student's academic background for the course. When the teacher discovers a student's deficiency, he tries to adapt the course to bring it into line with that student's present status. These practices are an improvement over that of beginning at the same place in the course with all students. But they still fall short of beginning "where the student is." They maintain the traditional emphasis upon subject matter as such, and overlook the status of the student at the beginning of a developmental range of subject matter. The proper relation of the subject matter to the student's needs, interests, and problems remains comparatively unknown.

To start where the student is, we must understand him thoroughly. We must not only know that the student is well below or well above average, but we must also try to understand the reasons for his level of achievement. A concern for the reasons for an individual's status and behavior is a major contribution of the guidance movement to education.

The guidance movement has continually emphasized the analysis of the individual student by teachers and counselors in order to obtain a better understanding of that student. It has also stressed the importance of helping the student to understand himself. The latter emphasis upon self-understanding permeates the entire guidance program. Analysis of the individual fits into the program in two ways. First, it enables counselors, teachers, and others to be of greater assistance to the individual student in dealing with his needs, his problems, his present status. And second, it helps the student better to understand himself—a basic aim of all guidance work.

These two purposes can be achieved only through the use of sound techniques. This book will consider a variety of such techniques. Their use should help to answer not only the question, "*What* is the student like?" but also the question, "*Why* is he that way?" In essence, the *what* involves the determination of the characteristics of the individual. The *why* considers the interrelations of the individual's characteristics as well as a host of other psychological information. In general, the *what* can be described as quantitative, and the *why* as interpretive.

TESTING TECHNIQUES PROVIDE VALUABLE DATA

The testing movement in education has emphasized the quantitative aspect of analyzing individuals. Despite the imperfections of tests and their frequent misuse, the emphasis upon measurement in American schools has made a wholesome and significant contribution to the philosophy of studying individuals.

Nevertheless, the authors of this book believe that methods in addition to testing must be used to provide sufficient information for instructional and guidance purposes. Non-testing techniques for studying individuals are important in connection with tests. Even the most elaborate testing program does not give us all the essential data. That is why tests should be used with supplementary techniques. An example drawn from the relation between scholastic aptitude tests and school achievement will clarify the point. Evidence that scholastic aptitude tests are not perfect is available on every hand. It is also well known that all students do not achieve at the levels

expected in view of their scholastic aptitude test scores. Discrepancies between the level of a student's scholastic achievement and the level of his tested aptitude are so commonplace that to describe these discrepancies guidance workers have developed such terms as "overachiever" and "underachiever."

The disparity between a student's measured ability and his school achievement may be due in some part to shortcomings of the test used. But the largest part of this disparity represents the operation of personal or situational factors which are not measured by the scholastic aptitude test. The *why* of overachievement or underachievement must be sought elsewhere.

Tests to measure general intellectual ability to do schoolwork have been developed to the stage where they are reasonably accurate. It is important to learn from tests how able a student is in his group. Results of these tests can be employed to predict a student's academic success in the future, but they cannot be used to predict that an individual *will certainly* behave in a particular way. They can be used, and are used, to predict the way he *will probably* behave. The emphasis is on *probability—not certainty*.

The most frequent error of teachers and counselors in using tests is to regard them as indicating a certainty rather than a probability. How often one hears a teacher say, "Jerry's intelligence test score is so low that you can't expect much of him." Such a teacher errs by predicting the certainty "that you can't expect much." A more nearly accurate interpretation would be: "Jerry's low intelligence test score indicates that we should probably expect less of him academically than of a person with a higher score." The proportion of students with low scores like Jerry's who make outstanding school records is smaller than that of students with higher scores. Since factors other than tested ability influence a student's achievement, it is impossible on the basis of test scores to predict with *certainty* that student's future achievement.

To clarify the point just made, consider these examples. John ranks in the lowest fifth of ninth-grade boys on a scholastic aptitude test, but he is receiving excellent marks in all four of his subjects. Jim, on the other hand, ranks in the top fifth on the test, but he is failing three of his four subjects. These find-

ings do not mean that the test is worthless. In fact, the test scores may quite accurately indicate both Jim's and John's general scholastic ability. But we cannot go beyond the significance of these scores and say, "Because Jim has plenty of ability for schoolwork, he *will* surely do well in high school." However, we can say, "Because Jim has high ability as indicated by the test, he probably has the capacity to make high marks and he is likely to make such high marks." And, after investigation, we may say that the test time limit was too short for John's reading speed, or that John has more efficient study habits than Jim has.

NON-TESTING TECHNIQUES SUPPLY USEFUL INFORMATION

Making sound predictions of achievement requires data in addition to scholastic aptitude test scores. Frequently, these additional data are subjective or qualitative in contrast with the more objective or quantitative test scores. Even so, counselors and teachers should always judge their students on the basis of a combination of objective and subjective evidence. When a counselor finds a real discrepancy between measured ability and achievement, he should always seek more facts than are available from tests alone. That is why this book, which is concerned with gaining an understanding of the individual, will deal with a variety of techniques in addition to testing. While some of these techniques may appear to be less "scientific" than testing, they should not be considered less important. Each technique should be evaluated in view of its contribution to an understanding of the individual.

Not all of a person's characteristics can be measured by the use of tests. Psychological tests as we know them today are a relatively recent development. Many psychological laboratories are at work on the job of refining these measuring devices. Within the next fifty years they may develop psychological tests which can measure many of an individual's characteristics. As they do, some of our present analytical techniques will undoubtedly appear to be very crude. And, relatively speaking, so they are! But these techniques are the best we have; moreover, they are often better than our own judgments about students.

Since a guidance worker is frequently called upon to help students predict their probable success in school, he must utilize the best possible bases for his predictions. To do this, scholastic aptitude tests alone are not enough; other techniques must also be used. The guidance worker must be able to evaluate the significance of data obtained from a variety of analytical devices.

In his evaluation of data, the counselor is guided by at least two sources of experience: his own experience and the experience of others. A counselor's own experience gives him a basis for judging whether or not the data under consideration are important. In some respects, his analysis of the data is similar to that of a physician. A physician is called upon to examine a patient who has a pain in his abdomen. The patient fears that he has an infected appendix. The pain in his side is a symptom which usually accompanies such a condition. But the doctor's experience has taught him that patients have had a similar pain even though their appendixes were healthy. The physician, therefore, does not make a diagnosis solely on the basis of one symptom—the nature and location of the pain. Rather he continues to examine other symptoms. If he finds that all the symptoms together make a pattern indicating appendicitis, then that is his diagnosis of the patient's ailment. So it is with the counselor. He withholds his judgment concerning a boy or girl until he weighs each fact in relation to other facts. A variety of facts is used to arrive at a single judgment of an individual's behavior.

PERSONAL EXPERIENCE PLUS PROFESSIONAL KNOWLEDGE

A counselor cannot accumulate enough personal experience in the use of every analytical technique to enable him to use it skillfully in making sound judgments. Instead, he must depend upon the experience of others for clues to the significance of the data collected. Much of this information is transmitted informally from counselor to counselor, by word of mouth. Counselors-in-training receive help from their professors. Counselors-on-the-job are aided by their supervisors. This person-to-person method of sharing experience is highly valuable.

Professional workers have another method by which they share their experience. This is through reports of research findings. To gain experience in this manner, the counselor must know something about the language of statistics. It is for this reason that the next two chapters are devoted to statistics. They are, in one sense, a glossary of terms. But they are more than that. These chapters present the basic statistical concepts with which counselors must be familiar if they are to understand, use, and evaluate techniques of analyzing individuals. Their object is to acquaint the reader with basic statistical concepts rather than to teach him computational procedures.

WHAT AREAS OF A STUDENT'S LIFE ARE CRUCIAL?

So far, this chapter has described the reasons for analyzing individuals. It has pointed out the need for both objective and subjective information about students. Now, what kinds of information do we need to get about any student? Over the years, counselors have pooled their experience and have agreed that it is essential to collect data in the following areas or aspects of a student's life.

1. *Scholastic ability.* A student's scholastic ability is important as one index of later educational and vocational adjustment. All other things being equal, the more scholastic ability the student has, the farther he can go in school. Vocational adjustment is also closely related to scholastic ability. Therefore, the counselor must be quite sure that he has a good estimate of a student's ability even if it is necessary to use more than one test. Of course, evidence of this ability will be gathered from sources in addition to tests.

2. *Past achievement.* A student's achievements represent his ability or aptitudes *in use*. Differences in his achievements are important not only because they indicate his present strengths and weaknesses, but also because they serve as guideposts pointing the way to his possible future.

The student with the highest grade average does not always make the top score on a scholastic ability test, and the student with the lowest test score is not always the one with the poorest grades. In regard to height and weight, we know from experience that the tallest person is not always the heaviest

person and that the lightest person is not always the shortest person. No two human traits are perfectly related. No two human traits vary together in such a way that the person having the greatest amount of one trait automatically has the greatest amount of the other trait.

It is important in studying a student as an individual to know what his past marks are, because these past marks are good clues to his future school performance. This information supplements our knowledge of scholastic ability obtained from tests. Achievement and ability must both be known if one is to know whether or not that student's achievement is at the level expected.

In studying a student's achievement record, teachers and counselors should pay particular attention to the student's strong and weak points. Do his marks show that he is superior in social studies and below average in sciences? Has English or mathematics always been his weakest subject? Did he do a better job in the class play than he did on the school newspaper?

In considering achievements, the counselor must go beyond those items related to schooling. He asks: Was this youth more successful the summer he worked on a farm than he was the summer he was a stock boy in a store? What jobs has he done best? What are his other accomplishments outside of school? Frequently a youth's non-school accomplishments are as significant in understanding him as are his scholastic achievements.

3. *Aptitudes and disabilities.* Ordinarily most individuals have some latent possibilities which are not called into play in their daily routines. When a student is doing well in a task, his teacher or counselor may say that he has a natural bent for such a task, or that he has a natural aptitude. Because such a bent or aptitude was present, it is the basis for the student doing the task particularly well. When daily routines do not call forth all of a youth's natural bents, however, the teacher or counselor must be alert to spot that youth's potentialities and to bring them into use.

Similarly, some students have disabilities which pull down their showing in certain activities. For instance, John may not be able to read efficiently. Joe's vocabulary may be limited. Mary may lack skill in studying, or in memorizing or organizing

ideas. Helen's hands may fumble in manipulative tasks. Bob may not be able to distinguish one note of music from another. Students may have disabilities in spite of having fairly good general ability. Teachers and counselors must be alert to spot a student's weakness before it gets the student into a competitive difficulty that leads to failure.

4. *Interests.* Vocational choices are one clue to where students hope to get in the world and one way of stating what they believe their interests and aspirations to be. Young people like or dislike many different things; they are interested in or bored by certain activities. They have hobbies; they are highly motivated when they undertake certain kinds of jobs. Whatever we call these phenomena, they are essentially interests—the things which hold one's attention for a longer or shorter period of time. Interests may either keep the student attentive in class or distract him from classroom tasks. They may bring about better learning, or they may interfere with learning. If a student's vocational choices, as expressions of interest, are impractical or impossible, these choices may lead him to frustration and failure. Whatever a student's interests are, the counselor must know about them if he is to study that student adequately.

5. *Personality adjustments.* All youth must learn to live with their own personalities and with the personalities of others. Young people learn to make these life adjustments more quickly than others. Most develop one particular pattern of personality and find it hard to change. A few youths show such poor adjustment that they become habitually maladjusted within their group. Such individuals have great difficulty in translating their abilities or aptitudes or interests into successful achievements because they simply cannot get along with people.

In studying a student, teachers and counselors must take into account the range of that student's personality and personal adjustments. They ask: Is this youth socially sure-footed? Does he shy away from social situations? Is he always unpopular or is he sought out by his fellows? Must he always have his own way? Is he so preoccupied with his own problems that he does not fully participate in other activities?

6. *Health.* Teachers and counselors do not need to be

convinced of the importance of good physical health. But at times some educators seem to ignore the influence of health upon the boys and girls with whom they work. All too often poor eyesight, poor hearing, poor general health, or specific health factors are overlooked as possible causes of a student's behavior. John's vocational choice may be inappropriate in view of his hearing difficulties. Mary's failure may stem from her generally poor health.

If the counselor is to do his job well, he must consider health factors. In order to understand a student, he must have knowledge of that student's health. But the counselor must have more than mere knowledge of a student's physical condition. He must be able to relate that condition to the classroom and extracurricular behavior of that student.

7. *Family background.* Knowledge of a student's family background is essential to understanding him. The economic resources of his family, for instance, bear directly upon his educational and vocational planning. Furthermore, his family background is closely related to many of his values and ways of behaving. Since family background is a general influence operating on the child for a greater number of hours per day than does the school influence, guidance workers cannot escape the necessity of learning something about that background.

No study of the student is complete unless his family background is taken into account. As a matter of fact, sociologists, anthropologists, and psychologists all are discovering a great deal of significant and sometimes depressing information about the relationship of family background to the behavior of young people both in school and out. Teachers should become familiar with this information since it gives them a clearer picture of the relationships between the home, the school, and the child's probable place in our society.¹

¹These relationships are described in such outstanding research reports as the following:

A. B. Hollingshead, *Elmtown's Youth* (New York: John Wiley and Sons, Inc., 1949).

Cf. W. Lloyd Warner, Marjorie Meeker, and Kenneth Eells, *Social Class in America* (Chicago: Science Research Associates, 1949).

THE PLAN OF THIS BOOK

Scholastic ability, past achievement, aptitudes and disabilities, interests, personality adjustments, health, and family background—these are the seven areas in which teachers and counselors must collect information if they are to understand an individual student and to help him. Later chapters will deal with methods and techniques which can be used to gather data, to collect and interpret data in specific areas, and to record, summarize, and evaluate the data collected about an individual.

Before considering the methods and techniques of analyzing the individual student, some readers will probably wish to review the fundamental statistical concepts presented next, in Chapters 2 and 3. A knowledge of the statistical ideas contained in these chapters is essential in evaluating the relative worth of the analytical tools and techniques presented later in this volume.

SUGGESTED READINGS

- Dunsmoor, C. C., and Miller, L. M. *Principles and Methods of Guidance for Teachers*. Scranton, Pa.: International Textbook Co., 1949. Chapter 6.
- Froehlich, C. P. *Guidance Services in Smaller Schools*. New York: McGraw-Hill Book Co., 1950. Chapter 9.
- Hamrin, S. A., and Paulson, B. B. *Counseling Adolescents*. Chicago: Science Research Associates, 1950. Chapters 1, 2, 7-9.
- Traxler, A. E. *Techniques of Guidance*. New York: Harper and Brothers, 1945. Chapters 1, 3, 15.
- Williamson, E. G. *How to Counsel Students*. New York: McGraw-Hill Book Company, 1939. Chapter 3.

Statistical Methods of Summarizing the Results of a Single Test or Measuring Device

STATISTICAL methods are valuable summarizing or "short-hand" devices. The results of research are most frequently presented in statistical terms. Hence, if the counselor is to profit from the research experience of others, he must be familiar with the language which research workers use to tell what they have learned. Also, if the counselor is to understand tests and to interpret test results correctly, he must have some knowledge of statistics. That knowledge, moreover, is the key to mastering many of the tools and techniques described in this book.

This chapter and Chapter 3 do not fully cover the field of statistics; rather, they present a simple discussion of the fundamentals of statistics. In this chapter we shall examine statistical methods used to summarize the results of a single measuring device. In guidance, occasions frequently arise when we need to prepare such summaries. For example, if a teacher gives an arithmetic test to all students in a seventh-grade class, he needs some method of describing how well members of that class did on the test. When he knows the scores of all his students, then he can compare the score made by a particular student with scores made by others in his class.

For summarizing the performance of a group of students, two types of statistical measures are valuable. They are measures of *central tendency* and measures of *variability*. To describe a student's performance in relation to his group, the *percentile rank* and *standard score* are useful. The methods of computing all the foregoing measures and of interpreting them

will be considered in this chapter. In Chapter 3, methods of comparing two groups of measures will be discussed.

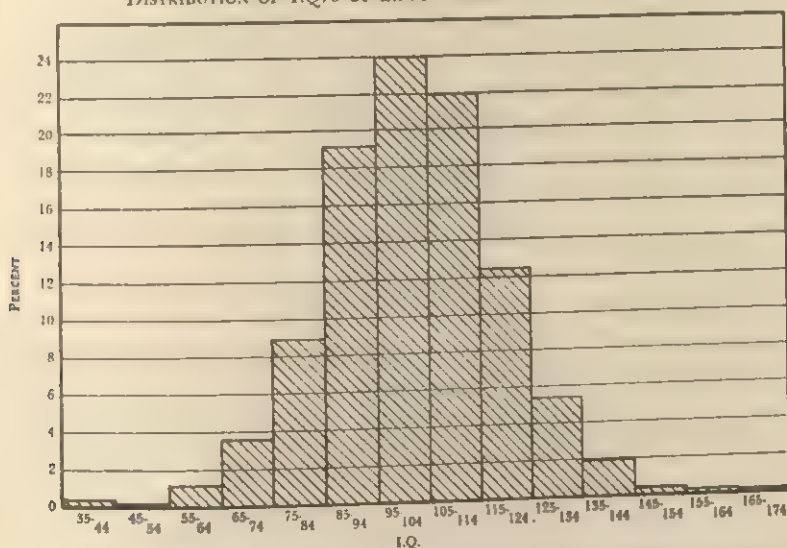
PEOPLE DIFFER IN ANY ONE CHARACTERISTIC

Individuals vary in any given trait—height, weight, scores on an arithmetic test, or intelligence test scores. There is no known trait which all individuals possess in exactly equal amounts. Rather, individuals differ from one another in the amounts of a given trait which they have. When individuals are distributed according to these amounts, they form a pattern which is known as “the normal curve of distribution.” Many persons recognize the existence of this normal or typical curve although they are not aware of what the normal curve means. Teachers, for example, may assign letter marks to the test scores made by students according to a normal curve of distribution, although they may not understand the nature of this curve.

As a matter of fact, the normal curve clearly shows that very few people have a large amount of what is being measured.

FIGURE 1

DISTRIBUTION OF I.Q.'s OF 2,904 CHILDREN AGES 2 TO 18*



*Source: Adapted from L. M. Terman and M. H. Merrill, *Measuring Intelligence* (Boston: Houghton Mifflin Company, 1937), p. 37.

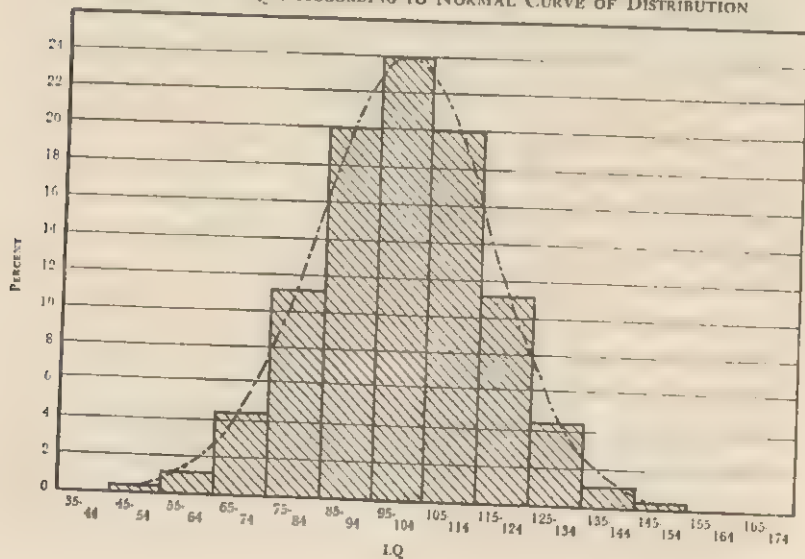
very few have a small amount of it, and most people have amounts which are at or near the average for the group. To illustrate, very few 14-year-old boys weigh less than 72 pounds or more than 148 pounds. Many weigh somewhere between 95 and 115 pounds. And so it is with other traits.

Mental ability tends to be distributed according to the normal curve. Such a curve is in the form of a frequency histogram in Figure 1 (page 13). This graph shows the distribution of intelligence quotients (I.Q.'s) of 2,904 American-born white children, between the ages of 2 and 18. The horizontal scale gives the successive I.Q. intervals: 35-44; 45-54; 55-64; etc. The vertical scale gives the percentage of all the children who were within each I.Q. interval.

The graph in Figure 1 is read in this manner: Children with an I.Q. of 95 through 104 (horizontal scale) constituted 24 percent (vertical scale) of the population tested. Or said another way: 24 percent of the children tested had an I.Q. somewhere within the interval, 95 through 104. Less than one percent of the children had an I.Q. between 165 and 174, inclusive, or between 35 and 44.

FIGURE 2

DISTRIBUTION OF I.Q.'S ACCORDING TO NORMAL CURVE OF DISTRIBUTION



If these 2,904 I.Q.'s were distributed more nearly according to the normal curve, their distribution would appear as shown in the histogram in Figure 2. If this distribution were made up of the I.Q.'s of, say, 100,000 children and if the mid-points at the top of the vertical bars were connected by curved lines, then the distribution would tend to assume the shape of a bell, truly the normal curve of distribution.

Later this chapter will discuss the measures which are applied to this distribution to describe exactly its central tendency and its variability. At this point it is sufficient to recognize that persons vary in the amount of any given human trait and that they usually vary according to the normal curve of distribution. This statement holds whether the trait measured is height, weight, mental ability, or social skills. The idea that people possess varying amounts of a given trait was recognized in school grading systems and in educational thinking long before educators borrowed the normal curve concept from statisticians and applied it to educational and psychological measurements.

STATISTICAL MEASURES HELP DESCRIBE A GROUP

Let us take an example which shows concretely how measures of central tendency and of variability are applied to a distribution of test scores. Look first at the numbers in Table 1. These numbers are scores on a test of scholastic aptitude; these scores were made by 50 seniors in High School A. As presented in Table 1, the numbers certainly do not make much sense to the reader.

TABLE 1
SCORES MADE BY 50 SENIOR STUDENTS IN SCHOOL A
ON A SCHOLASTIC APTITUDE TEST

66	65	77	56	31	56	34	94	65	119
79	36	60	110	99	74	87	39	41	59
57	63	101	112	63	83	110	72	99	77
55	101	87	39	64	74	75	81	67	87
54	56	82	114	85	82	80	65	80	49

If the scores for the 50 seniors in High School A are arranged in order from high to low, however, they begin to make more sense. This arrangement is shown in Table 2.

TABLE 2

SCORES MADE BY 50 SENIORS IN SCHOOL A ON A SCHOLASTIC APTITUDE TEST,
RANKED FROM HIGH TO LOW

119	101	87	82	79	74	65	60	56	39
114	101	87	82	77	72	65	59	55	39
112	99	87	81	77	67	64	57	54	36
110	99	85	80	75	66	63	56	49	34
110	94	83	80	74	65	63	56	41	31

Next, let us apply a few simple statistical measures to the ranked scores appearing in Table 2. These measures include the range, the average, and the standard deviation.

The Range. The range is a measure of the variability of the scores given in Table 2. Now that the scores are arranged in order, it is easy to see the *range* of the scores. The highest score is 119; the lowest is 31. The range is 119 minus 31, or 88. If a perfect score on this test was 215, no student in the group made such a score. Also, no student made a score of zero.

It should be noted that a good psychological test is so constructed that no student taking it will make either a perfect or a zero score. That is, if a great many students make high scores, the items of the test are too easy. If a great many students make low scores, the test items are too hard. Therefore, the good test includes items which *distribute* or *spread out* adequately the scores of the students being tested.

The Average. While the range describes the variability of the scores made by the 50 students on this test, it tells little about the *central tendency* of these scores. One method of determining this central tendency is to find the *average* of the 50 scores.

Most everyone knows what average means. In his daily vocabulary, he often uses such expressions as average height, average weight, average income, average grade, above average grade, and below average grade. To the statistician, however, the average is an arithmetical measure that represents the whole group of numbers he is considering. To him, the average score is that score around which most of the scores of a group tend to cluster.

In Figure 1 the average score, or I.Q. in this case, is approximately 100. About 24 percent of the children represented

in this graph have I.Q.'s somewhere between 95 and 104 inclusive. About 66 percent of them have I.Q.'s from 85 through 114. Thus, in the measurement of intelligence or any other trait possessed by a reasonably large number of persons, the majority of the scores obtained will be found near the average.

Statisticians recognize several kinds of averages—the mean, the median (the middle score), and the mode (the most frequent score). To obtain the mean in the example given in Table 2, simply add all the scores and divide by the number of students who received these scores. The scores total 3,661; when this total is divided by 50, the number of students tested, the quotient is 73.2. This is the *mean score* made by these 50 students.

The Standard Deviation. One clue to the variability of the trait measured, as said before, is the *range* of scores, i.e., the highest score minus the lowest score. An even better clue to this variability is the standard deviation.

As examples, consider two groups of people having the same average height, 5 feet 8 inches. In one group the tallest minus the shortest person shows a difference of twelve inches; in the other group the tallest minus the shortest person shows a difference of only six inches. According to the range of the two distributions, the people in the first group *vary more* in height or are *more variable* in height than are the people in the second group.

The range does not happen to be accurate enough for many statistical purposes, since it is affected too much by extreme scores. For example, here are two sets of ten scores each chosen from the 50 scores appearing in Table 1.

Group 1: 34, 55, 56, 57, 59, 60, 63, 65, 67, 74

Group 2: 50, 55, 56, 57, 59, 60, 63, 65, 67, 74

In the first set of ten scores (Group 1), the one extremely low score of 34 pulls the range out wide: $74 - 34 = 40$. It also affects the mean to a certain extent. The mean of the first set of ten scores is 59.0.

In the second set of 10 scores (Group 2), a score of 50 has been substituted for the one out-of-line score of 34. Now the range becomes $74 - 50 = 24$, and the mean becomes 60.6.

The best measure of variability is one not only that depends on the highest and lowest scores within a group but also that takes into account every other score within that group. For the two sets of ten scores just given, Table 3 shows how far each score varies from the mean score for all ten scores in its set or group. The mean of the first group is 59.0 and that of the second group is 60.6. Using these means, the subtractions shown in Table 3 can be made to determine the deviations from the two means.

TABLE 3
DEVIATIONS OF INDIVIDUAL SCORES FROM THE MEAN OF THE GROUP
AND THE ALGEBRAIC SUMMATION OF SUCH DEVIATIONS

GROUP 1			GROUP 2		
Mean	Score	Deviation	Mean	Score	Deviation
59.0	— 34.0	= +25.0	60.6	— 50.0	= +10.6
59.0	— 55.0	= + 4.0	60.6	— 55.0	= + 5.6
59.0	— 56.0	= + 3.0	60.6	— 56.0	= + 4.6
59.0	— 57.0	= + 2.0	60.6	— 57.0	= + 3.6
59.0	— 59.0	= + 0.0	60.6	— 59.0	= + 1.6
Subtotal = +34.0			Subtotal = +26.6		
59.0	— 60.0	= — 1.0	60.6	— 63.0	= — 2.4
59.0	— 63.0	= — 4.0	60.6	— 65.0	= — 4.4
59.0	— 65.0	= — 6.0	60.6	— 67.0	= — 6.4
59.0	— 67.0	= — 8.0	60.6	— 74.0	= —13.4
59.0	— 74.0	= —15.0	Subtotal = —26.6		
Subtotal = —34.0			Total = 0.0		
Total = 0.0					

After the deviations have been obtained, the plus and the minus values are added separately. The plus and minus subtotals equal each other—i.e., their sum or total is zero. If the plus and minus signs are disregarded and the two subtotals for each group are added, it can be seen that the students in Group 1 *deviate more, or vary more*, from their mean than do the students in Group 2.

As a mathematical measure of a group's variability, statisticians use the *standard deviation*. In computing the standard deviation, the first step is to square each deviation in each group. The square of any deviation, whether originally plus or minus, is always a positive number. Here is the table of such squared deviations:

TABLE 4
THE DEVIATION OF EACH SCORE FROM ITS GROUP MEAN AND THE
SQUARE OF ITS DEVIATION

Group 1	Group 2
$(+25.0)^2 = 625.00$	$(+10.6)^2 = 112.36$
$(+4.0)^2 = 16.00$	$(+5.6)^2 = 31.36$
$(+3.0)^2 = 9.00$	$(+4.6)^2 = 21.16$
$(+2.0)^2 = 4.00$	$(+3.6)^2 = 12.96$
$(+0.0)^2 = 0.00$	$(+1.6)^2 = 2.56$
$(-1.0)^2 = 1.00$	$(+0.6)^2 = .36$
$(-4.0)^2 = 16.00$	$(-2.4)^2 = 5.76$
$(-6.0)^2 = 36.00$	$(-4.4)^2 = 19.36$
$(-8.0)^2 = 64.00$	$(-6.4)^2 = 40.96$
$(-15.0)^2 = 225.00$	$(-13.4)^2 = 179.56$
Total = 996.00	Total = 426.40

When the squared deviations are added, it can be seen more clearly that Group 1 is more variable than Group 2. But these totals have two important weaknesses as measures of variability: First, they are in terms of squared score units instead of the original score units. Second, they cannot be compared directly if there are different numbers of persons in the two groups. To overcome this latter weakness, the total of the squared deviations is divided by the number of students in each group. The quotient obtained is the *mean squared deviation*, that is, on a "per individual" basis. This *quotient* is always comparable from group to group, regardless of the number of persons or cases in each group.

In Group 1 the mean squared deviation is 99.60, and in Group 2 it is 42.64. These numbers, of course, are in terms of the squares of the original score units, not of the original units themselves. To get the latter, take the square root of 99.60 and of 42.64. The values are 9.98 and 6.53, respectively.

Each of the foregoing values is known as the *standard deviation*. It has one invaluable characteristic. In a normal distribution, about 68 percent of the persons or cases within the group make scores between the following two points—the mean-plus-one standard deviation and the mean-minus-one standard deviation.

How true is this for our two groups of ten students each? In Group 1, the mean (59.00) plus one standard deviation (9.98) equals 68.98. The mean (59.00) minus one standard

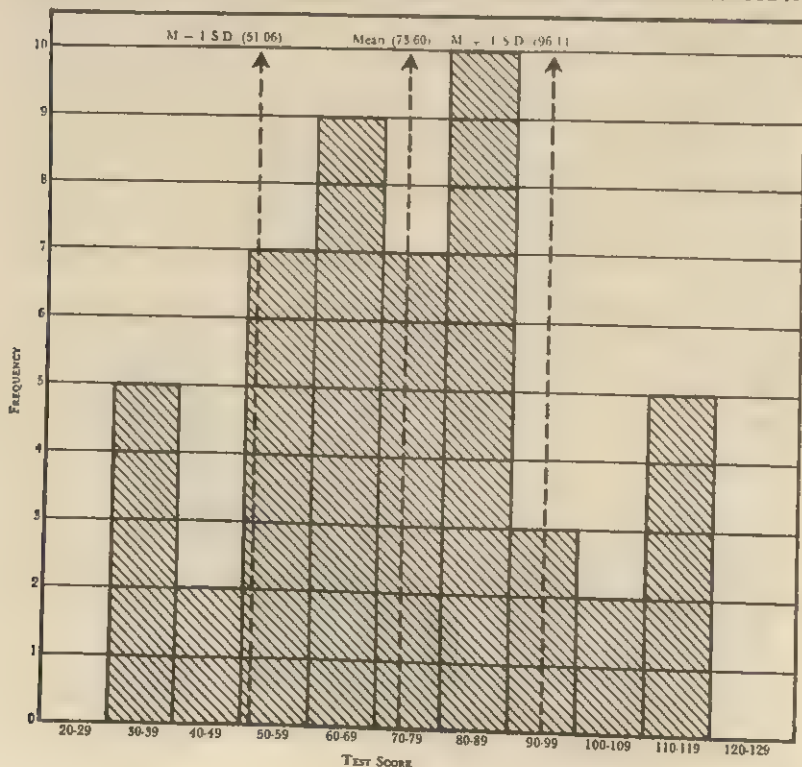
deviation (9.98) equals 49.02. If the distribution were normal, between the values of 68.98 and 49.02 there should be about 68 percent of all the scores made in Group 1, that is, seven of the ten scores. Likewise, in Group 2, seven of the ten scores should be within the range bounded by one standard deviation on either side of the mean—that is, between 54.07 and 67.13.

When similar computations are made for the total group of 50 scores shown in Table 1, the following results are obtained. The average or mean is 73.60. The standard deviation is 22.54. The mean plus one standard deviation is 96.14. The mean minus one standard deviation is 51.06.

The 50 scores given in Table 1 have been portrayed on the graph shown in Figure 3. Each score is represented by a small

FIGURE 3

HISTOGRAM OF SCORES ON A SCHOLASTIC APTITUDE TEST FOR 50 STUDENTS IN SCHOOL A



box of the graph. For example, the first score, 66, appears as a box above the interval, 60-69. When these boxes are joined, they form a series of bars. Hence this type of graph is called a *bar graph*. It is also called a histogram.

The horizontal scale, at the bottom of the graph in Figure 3, shows the range of the scores which are included within each division, or *class interval*. Notice that each class interval includes a range of 10 points—for instance, 20-29, or 30-39. The two numbers giving the range of each class interval are inclusive; thus the 30-39 interval includes scores from 30.0 through 39.9. The vertical scale, at the left of this graph, indicates the number or *frequency* of scores which are within each class interval in the entire range of scores. Within the class interval 30-39, for example, there are five scores.

In Figure 3, the mean of 73.60 is indicated by a vertical broken line. The two other vertical broken lines mark off the locations of the mean-plus-one standard deviation ($73.60 + 22.54 = 96.14$) and of the mean-minus-one standard deviation ($73.60 - 22.54 = 51.06$). Theoretically 68 percent of the scores fall between 51.06 and 96.14. Actually 72 percent of the scores are between these limits because the distribution is not perfectly normal.

In guidance work the standard deviation is particularly useful as a systematic device for locating the extent to which an individual's score varies from the mean score of his group on any test or scale of measurement. In this regard it is important to note again that the mean or average is the point from which the individual's score is judged to vary in a high or low direction. In other words, the mean in any psychological measurement is a convenient point of reference. Using the mean score and the standard deviation for a class, the teacher can determine whether a student scores at or near the mean or significantly above or below the mean. The teacher can also use means and standard deviations in comparing the averages and variabilities of scores made by different groups of students on the same test. Because the normal curve of distribution can be mathematically analyzed in terms of its standard deviation, this measure of variability is useful in calculations discussed later in this chapter and in the next chapter.

The Median. The scores made by the ten students in each of the two small groups (page 17) can be studied again to illustrate another measure of *central tendency* and another measure of *variability*. If a group of scores has a few extremely high or extremely low scores, these scores tend to pull the mean or standard deviation out of line. Then it is necessary to figure out a way to discount the effect of such extreme scores.

As we have already noticed, both the mean and the standard deviation are influenced by all scores including extreme scores. However, another kind of average called the *median* is not affected by these extreme scores because this measure is determined in another way.

Table 5 lists the ten scores in Group 1 and the ten scores in Group 2 according to rank. In Group 1, the median score is 59.5, exactly in the middle of the ten ranked scores. Five students make scores lower than this middle score and five make scores higher than this middle score. The median, in other words, is found by counting; it does not depend upon the size of score made by any one student.

TABLE 5
RANKED SCORES FOR GROUP 1 AND FOR GROUP 2

Group 1	Group 2
74	74
67	67
65	65
63	63
60	60
—	—
59	59
57	57
56	56
55	55
54	50

In Table 5, as just mentioned, the scores for Group 1 and the scores for Group 2 are ranked in order. A line separates the five highest scores from the five lowest scores. In each group the dividing line is halfway between the score of 59 and 60, which is a distance of one score unit.

One-half of one score unit is .5. This must be added to 59 or subtracted from 60 to get the halfway point of 59.5. When

there is an odd number of scores, the middle score is easy to spot; it is that score above and below which the same number of scores will be found. This halfway score is the *median* score. It is the exact midscore; an identical number of persons make scores above it and below it.

A comparison of the *mean* (59.0) and the *median* (59.5) for Group 1 reveals that the mean is slightly lower than the median. This is caused by the one out-of-line or extremely low score of 34. In Group 2, the mean (60.6) is above the median (59.5) because no extreme score is pulling the average down.

The mean and the median are both measures of *central tendency*. They both give an indication of the center of the distribution of scores. If both the mean and the median are computed, it is possible to get an idea of how normal the distribution is. When the scores are distributed according to normal curve expectations, then the mean and median, both measures of central tendency, are the same or about the same. If the difference between the two is slight, there is no need for concern. However, if the difference is large, then the distribution of scores should be carefully examined for out-of-line scores before conclusions are drawn or before further calculations are made.

Quartiles. An easy-to-use index of variability is the *interquartile range*. This is the range within which the scores made by the middle 50 percent of the students are located. To compute this interquartile range, find the score below which the lowest 25 percent of the ranked scores lie, and then the score above which the highest 25 percent of the ranked scores lie.

For example, 25 percent of the 10 scores in Group 1 equals 2.5 scores. To determine the lower quartile point, count the ranked scores beginning with the lowest score. The second lowest score is 55; the third lowest is 56. Between these two scores lies the 2.5th score. That score is halfway between 55 and 56, or 55.5, which is called the lower quartile score point.

The upper quartile score point is computed in a similar manner. Hence, 75 percent of 10 scores is 7.5 scores. Counting from the bottom of the ranked scores, the seventh score is found to be 63; the eighth, 65. The score halfway between these scores is 64, which is the upper quartile score point. Thus, the middle 50 percent of the group of ten students make scores between

the lower quartile point and the upper quartile point, that is, between 55.5 and 64. The difference is 8.5. This range is known as the *interquartile* range. It is a measure of variability that includes the middle 50 percent of the scores made by the group.

The median and interquartile range are best used in a group which has a relatively small number of scores because in such a group one or two extreme scores pull the mean and the standard deviation out of line.

WHAT ARE SOME OF THE PROBLEMS OF SAMPLING?

Statistical methods, as was said earlier, are one means of interpreting measurements or scores. But such interpretations must always consider how well the problems in sampling have been solved.

A psychologist, for instance, may have an excellent measuring or scoring device for a given human trait. In standardizing this device, however, he may not have had an adequate sample of all the people who possess this trait. In this connection, keep in mind that no one can apply his measuring device to *all* people who have some amount of the trait being measured. He can only apply it to a *sample* of all people. This sample may be large or small. In our example, Group 1 was a *sample* of 10 students selected from a class of 50 high-school seniors in School A. In turn, these 50 high-school seniors were a *sample* of all seniors in that high school, in that school district, in that state, or in the United States as a whole.

In the research work involved in developing tests, the whole sample may be poorly selected; too many individuals within that sample, for instance, may be atypical. As a result, interpretations of results obtained from that sample are bound to be inaccurate. That has been true, at times, of the results reported by so-called public opinion pollsters. Because their samples were inadequate, they obtained misleading returns.

As a case in point, consider the *Literary Digest* poll of 1936. The *Digest* asked a nation-wide sample of people whom they favored as the next president. The sample replied overwhelmingly in favor of Landon, but subsequently Roosevelt was elected. The *Digest's* sample was large enough, but it was not a typical cross-section of the voting public. The persons

asked to express an opinion by the *Digest* were chosen from lists of telephone subscribers in urban areas. As the election returns showed, many people who did not have telephones had voting opinions which were different from the opinions of many people who had phones.

After the 1936 episode, the pollsters improved their sampling techniques. Even so, some of them wrongly predicted the presidential winner in the 1948 election. Here again the pollsters had large enough samples, but they did not take adequate safeguards to insure that their samples were truly representative of the voters as a whole.

To see the effects of sampling on test results, note again that the mean of the 50 scores in Table 1 was 73.2 and that the mean of the 10 scores in Group 1 (from this same table) was 59.0. The large difference between these two means clearly indicates that Group 1 was *not* a representative sample of the scores made by all 50 seniors in School A.

The examples just given illustrate an important point not only in statistics but also in all guidance work. The students who are measured on a given trait and whose scores are statistically treated are only a sample of all the students having the trait being measured. The testing device used may be an excellent measuring instrument; the statistical computations applied to the measurement results may be accurate. But if the students within a given group are not representative of the students for whom the testing device was made, there is danger that comparative interpretations of the amount of the measured trait possessed by that group or by an individual within it will be inaccurate and misleading.

HERE ARE SHORT CUTS TO STATISTICAL WORK

If the group has only a few students in it, the arithmetical work involved in computing the mean and the standard deviation is not great. But if the group has 30 or more students, it is wise to use short cuts to obtain these statistical measures. One of these short cuts is the *class interval*.

As an example of the use of the class interval, see the column at the extreme left in Table 6. In determining the class intervals for a set of scores, find the total range of scores. Then

TABLE 6

SHORT-CUT METHOD OF COMPUTING THE MEAN AND THE STANDARD DEVIATION FOR A GROUP OF 50 SCORES

Class Interval	Tallies	Frequency (<i>f</i>)	Deviation (<i>d</i>)	Frequency Times Deviation (<i>fd</i>)	Frequency Times Deviation Squared (<i>fd</i> ²)
110.0-119.9	||||	5	+3	15	45
100.0-109.9	||	2	+2	4	8
90.0- 99.9	|||	3	+1	3	3
80.0- 89.9	|||| |||	10	0	0	0
70.0- 79.9	|||| ||	7	-1	-7	7
60.0- 69.9	|||| ||||	9	-2	-18	36
50.0- 59.9	|||| ||	7	-3	-21	63
40.0- 49.9	||	2	-4	-8	32
30.0- 39.9	||||	5	-5	-25	125

$$N = 50$$

$$\text{Interval } (i) = 10$$

$$\text{Assumed Mean } (AM) = 85.0$$

$$\begin{aligned} \text{Mean } (M) &= AM + \left(\frac{\sum fd}{N} \right) i \\ &= 85.0 + (-1.14)10 \end{aligned}$$

$$= 85.0 - 11.4$$

$$\text{Mean } (M) = 73.6$$

$$\sum fd = -57$$

$$\frac{\sum fd^2}{N} = \frac{319}{50} = 6.38$$

$$\sum fd = -57$$

$$\frac{\sum fd}{N} = \frac{-57}{50} = -1.14$$

$$= -1.14$$

$$\left(\frac{\sum fd}{N} \right)^2 = (-1.14)^2 = 1.30$$

$$= 1.30$$

$$SD = i \sqrt{\frac{\sum fd^2}{N} - \left(\frac{\sum fd}{N} \right)^2}$$

$$= 10 \sqrt{6.38 - 1.30}$$

$$= 10 \sqrt{5.08}$$

$$= 10 (2.254)$$

$$\text{Standard deviation (SD)} = 22.54$$

divide this total range by the desired number of class intervals, say 8, 9, 10, 11, or 12. In the example, the range was from 31 to 119, or 88 score points. Dividing 88 by 9 (the selected number of class intervals) yielded the figure 9.8. This was changed to the nearest whole number, 10, the number of score points to be included within the class interval. According to statisticians, class intervals of two points or of five points, or of multiples of two or five points, are easiest to work with.

After the size of the class interval has been determined, in

this case 10 score points, the next step is to write down the intervals. In the top interval, the highest score, 119, is included. The top interval, therefore, is written to include every score from 110 up to but not including 120. It is convenient to write this as 110.0-119.9, thus indicating that this class interval does not overlap the class interval next to it. If two intervals overlap, for example, 100-110 and 110-120, a score of 110 might be placed in either the former or the latter interval. Such overlapping obviously causes confusion in tallying certain scores.

Now look at the 50 scores shown in Table 2. These scores are to be tallied by class intervals, as shown in Table 6. Just to the right of each interval, mark a tally for each score that falls within that interval. Next, total the number of such tallies and write the total in the column headed "Frequency (f)." This column shows the distribution by class intervals of all the 50 scores in the group. Since there is one tally mark for each score, the frequency column must add up to 50.

The next step is to *guess* or *assume* the mean of the 50 scores. In Table 6, dotted lines are drawn to indicate that the class interval, 80.0-89.9, contains the assumed mean. This interval is selected because it has the greatest number of frequencies. The exact middle point of this selected interval is 85.0, halfway between 80.0 and 89.9. This midpoint, 85.0, is called the *assumed mean*.

From now on the computational work is simplified by using deviations from the class interval where the assumed mean is located. The assumed mean, as just said, is in the interval 80.0 to 89.9. The class interval just above the assumed mean interval covers the score range, 90.0 to 99.9. That interval is assigned the deviation value of +1. The next higher interval is 100.0 to 109.9; it is assigned the deviation value of +2. The interval, 70.0 to 79.9, just below the assumed mean is assigned the deviation value of -1. In Table 6, under the heading "Deviation (d)," all these deviation values have been written in.

Next, in each interval, multiply the number in the frequency column (f) by the number in the deviation column (d). Thus, for the interval 110.0-119.9, the product of this multiplication equals +15. This number is written under the heading, "Frequency Times Deviation (fd)." This multiplication is

necessary to give proper weight to the number or frequency of scores within each class interval.

The positive "fd" figures are totalled. Next the negative "fd" figures are totalled. If the true mean is equal to the assumed mean, the positive "fd" subtotal will equal the negative "fd" subtotal. In Table 6, however, the positive "fd" subtotal is 22 and the negative "fd" subtotal is 79. The sum of +22 and -79 is -57, the total "fd" value. Dividing this value of -57 by 50, the number of scores, yields a mean deviation of -1.14. This is known as the correction.

The next step is to convert this correction into score points. This is done by multiplying -1.14 by 10 (the number of score points in the class interval); the product is -11.4. This correction is added to the assumed mean to obtain the true mean.

It was assumed (1) that the mean was in the class interval, 80.0-89.9; (2) that the ten scores in this interval were distributed equally throughout the interval; and (3) that the assumed mean was at the middle of this interval (a score of 85.0). To find the true mean, a formula is now applied. This formula is: the assumed mean plus the correction equals the true mean. Thus, $85.0 + (-11.4)$ equals $85.0 - 11.4$, or 73.6, the true mean. Earlier, when all 50 scores were added and divided by 50, the true mean was found to be 73.2. As this difference indicates, the error resulting from the use of the short method of calculating the mean for these 50 scores is quite small.

Continuing the use of the short method, consider next the steps necessary to calculate the standard deviation of the 50 scores, as Table 6 shows. First, multiply each deviation (d) by the frequency-times-deviation (fd) to obtain the frequency-times-deviation-squared (fd^2). In the interval, 110.0-119.9, this product is 3 times 15, or 45; this number appears in the column (fd^2), at the extreme right. Second, add all the figures in the right-hand column (fd^2). Their total is 319. Third, divide 319 by the number of scores (50). The quotient is 6.38. Fourth, square the correction, -1.14; its square is 1.30. Fifth, from 6.38 subtract the squared correction; $6.38 - 1.30$ is 5.08. Sixth, take the square root of 5.08; it is 2.254. Last, multiply 2.254 times 10, the number of score points in the class interval; the product is 22.54. This is the standard deviation of the scores

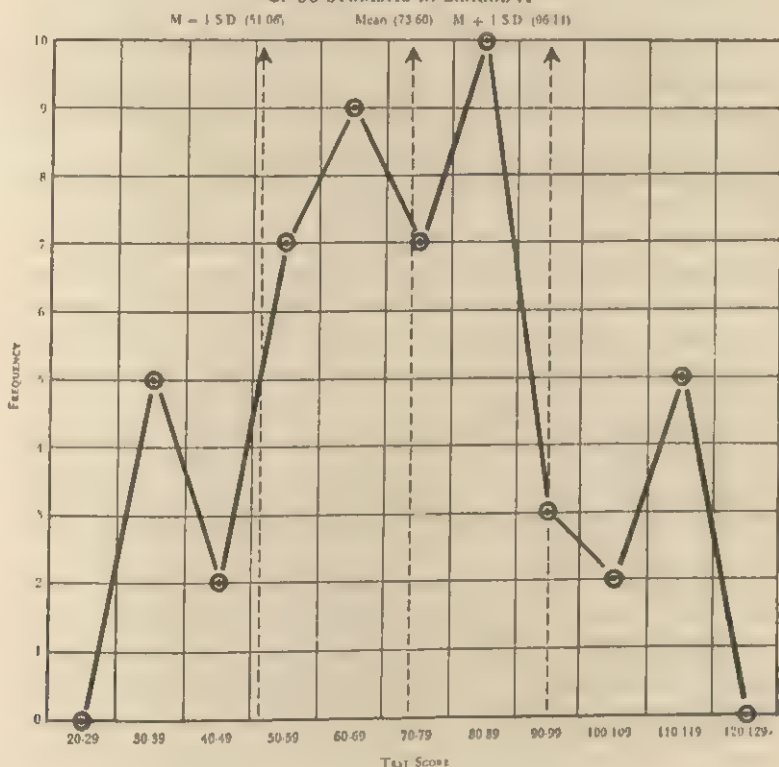
made by this group of 50 students. The process is to find the standard deviation, first, in terms of class intervals and, second, in terms of actual scores. A comparison of Table 4 and Table 6 indicates the work saved through using the short method of computing the standard deviation.

HOW IS A FREQUENCY POLYGON PREPARED?

Figures or charts help to make statistical material clearer to the reader. This was shown in the histogram presented in Figure 3. It is shown again in Figure 4 where the 50 scores used in Figure 3 are displayed in a different kind of graph, the *frequency polygon*. In constructing this polygon, the following steps are necessary.

FIGURE 4

FREQUENCY POLYGON OF SCORES ON A SCHOLASTIC APTITUDE TEST OF 50 STUDENTS IN SCHOOL A



As pictured in Figure 4, on a sheet of graph paper, draw a heavy horizontal base line and then lay off equal spaces on it. Use one space for each class interval. Within the space for each interval, write its score limits (i.e., 20-29, 30-39, 40-49, etc.). Note that the extreme intervals, 20-29 and 120-129, are shown even though there is no frequency in either of them.

Now at the left, draw a heavy vertical line and lay off equally spaced intervals on it. Write numbers to indicate the frequencies: 1, 2, 3, etc.

The grid is now ready for plotting. Table 6 shows that there are five scores in the interval, 30-39. Hence, on the grid, make a heavy dot at the point where an imaginary horizontal line from the point representing the number 5 on the vertical scale intersects an imaginary vertical line from the middle point of the 30-39 interval on the horizontal scale. In the same way, make a dot for the frequency in each of the other intervals. For example, the next point to be plotted is at the right of 2 on the vertical scale and above the midpoint of 40-49 on the horizontal scale. In such a polygon, the dot representing the number of scores (frequency) is plotted directly above the middle point of the class interval. To make each dot stand out, draw a small circle around it.

After all the dots have been plotted, connect these dots with heavy straight lines. The resulting graph is a *frequency polygon*. In the polygon in Figure 4, straight broken vertical lines show the positions of (a) the mean of the 50 scores; (b) the mean-plus-one standard deviation; and (c) the mean-minus-one standard deviation.

If a much larger number of scores were plotted on Figure 4, the jagged peaks and valleys would smooth out. The resultant curve would be similar to that shown in Figure 2. This smooth curve is the so-called normal curve of distribution described earlier in this chapter.

HOW IS A PERCENTILE RANK COMPUTED?

Another highly valuable statistical device is that of percentile rank. It shows exactly how a student's score compares with the scores of other students who took the same test. Look again at Table 2, where the scores for 50 seniors in High

School A were listed in high-to-low order. Here it is easy to see that the student scoring 119 ranks first and that the student scoring 31 ranks 50th.

It is usually more important to know the relative rank of a given score than the numerical size of that score. When that relative rank is stated in terms of a percentile rank, it becomes most meaningful to the student or teacher. The percentile rank indicates the *percentage of persons tested who made scores equal to or lower than a specified score*. For example, if a score of 73 has a percentile rank of 50, a counselor can say, "Fifty percent of those tested made a score equal to or lower than 73."

Earlier in this chapter it was shown that the *median* is the point at or below which exactly 50 percent or half of the scores fall. The *lower quartile score* is the point at or below which 25 percent of the scores fall, and the *upper quartile score* is the point at or below which 75 percent of the scores fall. These points illustrate that it is possible to get a score point at or below which any given percentage of students fall, *relative to the group tested*.

It is essential to recognize the full meaning of the phrase "relative to the group tested." A student's score on a test may place him at the 75th percentile of his group, even though such a score may represent only 60 percent of the "perfect" or total possible score on that test. In other words, there is an important difference between percentile standing in a group and "percentage of perfection" in performance.

In classwork, nearly all teachers assign marks on the basis of percentages of the perfect score on a given examination. For example, if a test has ten questions and John gets eight correct, his teacher is likely to give his test paper a mark of 80 percent. In this example, the mark of 80 percent obviously refers to the percent of questions answered correctly by John, not to his relative standing in the class. The teacher may next arrange the percentage marks earned by all students from highest to lowest. He then figures out the percent of all students who made a mark equal to or lower than John's. Thus he finds that a percentage score of 80 is a relatively good score. It is at the 90th percentile of the class—that is, 90 percent of the class made a score of 80 or below.

TABLE 7
CUMULATIVE FREQUENCY OF SCORES OF 50 STUDENTS'

Interval	Frequency	Cumulative Frequency
110.0-119.9.....	5	50
100.0-109.9.....	2	45
90.0- 99.9.....	3	43
80.0- 89.9.....	10	40
70.0- 79.9.....	7	30
60.0- 69.9.....	9	23
50.0- 59.9.....	7	14
40.0- 49.9.....	2	7
30.0- 39.9.....	5	5
	N = 50	

To see exactly how percentile ranks are computed, refer to Table 7. It displays the number of students making scores within each specified class interval. In the right-hand column, headed "Cumulative Frequency," the number of scores made by the 50 students are simply "piled up" or accumulated from low to high. The next step is to determine the test scores at or below which various percentages of the students fall.

Referring again to Table 7, find the score which is equivalent to the 50th percentile rank—that is, the test score at or below which 50 percent of the 50 scores fall. Fifty percent of 50, the number of scores, equals 25. Therefore, your job is to find the 25th score. Counting up from the bottom of the distribution, as shown under the heading "Cumulative Frequency," 23 scores are at or below 69.9. Notice, the next higher interval, 70.0-79.9, has seven scores. To find the 25th score, only two of these seven scores are needed. Said fractionally, two-sevenths of them are needed. This next class interval, 70.0-79.9, covers a distance of 10 score points. Assuming that the seven scores are equally distributed throughout this interval, we need to go only two-sevenths of the distance from the bottom to the top of this interval to locate the 25th score. Two-sevenths of 10 equals 2.86 score points. If these points are added to the bottom of the class interval (70), we obtain our desired score of 72.86, at or below which 50 percent of the 50 scores fall. Employing the same method we obtain the 75th percentile, the score at or below which 75 percent or 37.5 of the scores fall.

Also thereby, we obtain the 25th percentile, 57.8, the score at or below which 25 percent of the scores fall.

TABLE 8

SELECTED RAW SCORES AND EQUIVALENT PERCENTILE RANKS BASED ON MENTAL ABILITY SCORES OF 50 SENIORS IN HIGH SCHOOL A

Raw Score	Percentile Rank
119	99
109	90
89	80
85	70
79	60
73	50
67	40
61	30
54	20
39	10
31	1

In a similar manner we can find the score equivalent to any given percentile rank from 1 to 100. Table 8, for instance, shows eleven scores and their corresponding percentile ranks. Thus, from this table it can be seen that a score of 85 is equal to a percentile rank of 70.

Percentile ranks, as just demonstrated, convert a test score into a more meaningful index of relative superiority or inferiority. They make it easy not only to compare a student's performance with that of other students who took the same

TABLE 9

SELECTED RAW SCORES WITH EQUIVALENT PERCENTILE RANKS FOR SCORES ON A TEST OF MENTAL ABILITY AND A DIAGNOSTIC TEST OF READING COMPREHENSION

PERCENTILE RANK	RAW SCORES	
	Mental Ability Test	Diagnostic Test in Reading Comprehension
99	119	131
90	109	93
80	89	84
70	85	78
60	79	74
50	73	69
40	67	66
30	61	61
20	54	35
10	39	26
1	31	21

test, but also to compare a student's performance on one test with his performance on another test.

Consider the data in Table 9 (page 33). This table portrays given percentile ranks and the corresponding raw scores on a mental ability test and on a diagnostic test in reading comprehension.

Suppose that John made a score of 79 on the mental ability test and one of 78 on the reading comprehension test. What do these scores mean? Do they prove that John did about as well on one test as on the other? Little if anything is known about John if only his raw scores are known. But if these scores are converted to percentile ranks, the counselor can see more clearly the boy's strong and weak points and can then be of more help to him.

To obtain John's relative standing in the two tests, his counselor can refer to Table 9. It indicates that his mental test score of 79 is equivalent to a percentile rank of 60, but his reading test score of 78 equals a percentile rank of 70. With this information at hand, the counselor can say, "John's score on the mental ability test is relatively lower than his reading test score. On the former test his performance is equal to or better than 60 percent of the students, while on the latter test he equals or exceeds 70 percent of them."

WHAT NORMS ARE AVAILABLE?

All well-constructed tests have norms. Using these norms, the counselor can readily compare the score made by a given student with the scores made by other students who took the same test.

The manuals for standardized tests give norms in a variety of forms. Sometimes these norms are percentile ranks. Nearly always these norms appear as *age norms* or *grade norms*. For a given test, for example, the age norm 14.5 is the mean of the scores of all 14 year-old children who took the test for standardization purposes. The grade norm 9.5 is the mean of the scores of all ninth-grade students on whom the test was standardized. Thus, if John, age 14, gets the same score as the average child age 14, his age standing on that test is 14.5. But if he makes the same score as the average child age 16, his age standing on that

test is 16.5. If Mary obtains the same score as the average pupil in Grade 9, her grade standing on that test is 9.5. If she is now in Grade 7.5, her performance on that test is two grades above her present grade.

A few tests have *standard score norms*. These norms need a word of explanation here. Assume that John made a score of 80 on the mental ability test taken by 50 seniors. For their scores, the mean is 73.2 and the standard deviation is 22.5. John's score of 80 is 6.8 score points above the mean. Dividing 6.8 by 22.5 (the standard deviation) yields a quotient of 0.3. Thus John's score of 80 is 0.3 of one standard deviation above the mean; said another way, his standard score is 0.3. Had John made a score 6.8 score points below the mean, his standard score would have been -0.3 .

In order to avoid plus or minus values and decimals, the manual of a standardized test usually gives standard scores in terms of a scale which ranges from 0 to 100. On this scale, the mean is at point 50 and one standard deviation is 10 points. Applying such a scale to John's score involves the following simple computations. The mean of the group of 50 scores is 73.2; its standard score value, according to the scale just given, is 50. John's score of 80 is 0.3 of one standard deviation above the mean. Multiplying 0.3 by 10 equals 3. Adding 3 to 50, his score is equal to 53 on the scale of standard scores, from 0 to 100.

If each of the manuals of two different tests contains the standard score values equivalent to raw scores, then the counselor can compare a student's standard score on one test directly with his standard score on the other test. This kind of comparison is highly valuable in guidance work.

Such standard scores should not be confused with percentile ranks, which are more frequently published in test manuals. For example, if a student's test score is equal to a standard score of 60, his score is one standard deviation above the mean of the group on which the test norms are based. In a normal distribution, 34 per cent of the scores are between the mean score and the score located at the mean-plus-one standard deviation. This 34 per cent, plus the 50 per cent at and below the mean, accounts for 84 percent of the cases. Therefore, a standard score of 60, which is one standard deviation above the

mean, equals or exceeds the scores made by 84 percent of the students and is equivalent to a percentile rank of 84.

WHAT CHARACTERISTICS SHOULD TEST NORMS HAVE?

While interpreting test scores through reference to the test manual, the guidance worker should ask this key question: In standardizing his test, did the test-maker have a typical or representative sample of students?

This question raises again the importance of considering the nature of the norms for a given test. These norms should have such characteristics as the following: First, the norms should be derived from a sample of people who are *comparable* to the students to whom the test is to be given. Second, these norms should be derived from samples of people similar to those with whom the students may *sooner or later want to compete*. And third, these norms should be derived from samples of people similar to those with whom the students may *sooner or later have to compete*. These points are examined next in greater detail.

On a particular test, it may be desirable to find out how John's score compares with scores made on the same test by other students of the same age or grade. If a standardized achievement test is to be used, it must have norms derived from a sample of students who have had about the same amount of school experience as John has had. This means that these students should have been in the same grade as John and approximately his age. To generalize, in choosing a test, the question must be asked, "Does the test have norms appropriate to the students whom I want to test?" If the answer is "No," the next question must be asked, "Can I give the test to a large enough *sample* of my students (50 to 100 or more) so I can make up my own percentile ranks?" Only if either of these questions can be answered affirmatively should the test be considered for use.

Prediction. As already pointed out, norms can be used to compare John's performance with that of persons of similar age or grade. Norms can also be employed to *predict* John's relative performance later in his school career. Suppose that the counselor wants to predict whether or not John will succeed in college. John, now in Grade 12, will graduate in June

and wants to go to college the following September. To see what John's chances are for competing successfully in college, should his score on a scholastic aptitude test be compared with the scores made by other members of his graduating class? Or should his score be compared with the scores made by college freshmen? The first comparison is valuable but the latter is even more so because John will have to compete with college freshmen.

Suppose, further, that John wants to be an engineer. It would then be wise to compare his achievement in mathematics and science with the achievements therein of other high-school seniors. It would be even wiser to compare John's achievements with those of seniors who plan to enter engineering schools the next year.

John may be capable of learning more mathematics or science than he now knows; therefore, his present achievement in these two fields is not necessarily his potential achievement. But it can be said that John has a good chance to succeed in an engineering curriculum in college if his present achievement is *far above* the average of the group of students who are planning to train as engineers. Conversely, he has a poor chance to succeed if his present achievement is *far below* the average of the group with which he will compete.

The same kind of example can be drawn from the measurement of occupational interests. Bill, now 17 years old, says he wants to be a salesman. Assume that Bill's interest in salesmanship appears to be fairly definite and persistent. Assume also that his interest test scores compare favorably with the norms—that is, with the test scores of successful *adult* salesmen. Then it is likely that Bill's measured occupational interests indicate an occupation or group of related occupations in which he may later find a job and succeed in it.

In using tests, the counselor must know something about the growth of various kinds of behavior in individuals to determine whether testing will yield intelligible results. To select tests, he must be aware of the importance of available norms. To interpret test results, he must see students not only *as they now are* relative to others like them, but also *as they may be*

relative to others whom they want to be like or with whom they want to compete.

SUMMARY

This chapter has considered two measures of central tendency: the *mean* and the *median*, these being two kinds of averages. It has discussed the *standard deviation* and the *interquartile range*, both measures of variability. All of the foregoing measures can be used to describe or summarize groups of test scores or other measurements of human characteristics. In guidance work they can be employed to compare an individual's performance with that of the group. The use of test norms and the general problems of prediction were also briefly described.

The concepts developed in this chapter will aid the reader in understanding those in the next. The latter will present methods of comparing two groups of measurements.

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Statistical Methods for Analyzing Groups of Test Scores and Other Data

CHAPTER 2 presented the statistical techniques through which a counselor can summarize measurements or scores made by a group of students on a given test. The present chapter gives techniques whereby he can determine the association between scores made by those students on two or more tests, that is, on measurements of different characteristics. This chapter deals specifically with the question: What is the relationship between two sets of test scores made by the same students? To obtain this information, the counselor must, of course, apply the statistical technique which yields the coefficient of correlation.

WHAT TRAITS ARE ASSOCIATED?

In working with students, the guidance worker may become interested in many different relationships: for example, between height and weight; between weight and age; between scholastic aptitude and father's income; between social adjustment and participation in extracurricular activities; between scholastic aptitude and school marks; and between home conditions and truancy. In considering the relationship between any two traits as found in a group of students, the counselor wants a method to determine precisely the amount of this relationship.

Some of the aforesaid pairs of students' traits seem to be co-related (correlated); or, saying it another way, within a group of individuals, two traits appear to vary together. In general, the taller a person is, the heavier he is; the better his

social adjustment, the more activities he takes part in; the "brighter" he is, the better marks he gets.

A counselor cannot with certainty say that a student is taller *because* he is heavier, or that he is heavier *because* he is taller, since there is no necessary cause-effect relationship between height and weight in that sense. The counselor can say, nevertheless, that in a group of people, taller people tend to weigh more; and conversely, shorter people tend to weigh less. The relationship, of course, is not perfect, since the tallest person is not always the heaviest nor is the lightest person always the shortest.

This idea can be illustrated in another way, by considering a common belief about human behavior. Everyone has heard the saying that fat men are always jolly. Assume that each person in a group of 20 men can be classified as fat or thin, and also as jolly or not jolly. A diagram set up to record the results of this classification might look like this:

	jolly		not jolly
	fat		
thin			

This diagram has four boxes representing the following pairs of characteristics: fat and jolly; fat and not jolly; thin and jolly; and thin and not jolly. If a man is both fat and jolly, for example, a tally is entered in the upper left-hand box.

If the common belief were completely true, all the fat men in the group would be jolly. All the thin men would be not jolly. And the 20 tallies would be entered in this manner:

	jolly		not jolly
	fat	////	
thin		////	////

Actually, however, some fat men are jolly and some are not jolly. Also some thin men are jolly and some are not jolly. The diagram thus would probably be nearer the facts if it looked like this:

	jolly /////	not jolly /////
fat		
thin	/////	/////

This means that being jolly or being not jolly is characteristic of fat men and thin men alike. Therefore, there is no relationship between the trait of fatness and the trait of jollity. In other words, fatness and jollity do not seem to vary together.

The foregoing type of diagram is the simplest way of seeing whether within a group of individuals two traits are related. It can be applied to relationships which are assumed in the expression of other popular beliefs such as the following: People with close-set eyes are dishonest. People with flabby handshakes are weak-willed. People with high foreheads are intelligent. In the case of every one of these common beliefs the chances are that the two traits are completely unrelated. This lack of relationship can be demonstrated through the use of a diagram like that just presented.

WHAT IS CORRELATION?

Measurement of certain kinds of traits possessed by each individual in a group, however, may be related to some degree. For example, within a group of students, there is usually some relationship between scores on a scholastic aptitude test and academic marks. To determine the degree of relationship between two given traits, statisticians have devised a useful index. This index is called the *coefficient of correlation*. This coefficient ranges on a scale of values from $+1$ (perfect positive relationship) through 0 (no relationship) to -1 (perfect negative relationship). Since $+1$ or -1 indicates perfect relationship, such coefficients are seldom found. Ordinarily the coefficient is less than perfect, that is, is less than 1 . It is usually expressed as a decimal, such as $+.90$ or $-.564$. As just stated here, the coefficient is usually computed to two or three decimal places.

To explain further the meaning of correlation, consider two traits that tend to be related: ability as measured by scores on a scholastic aptitude test and achievement as measured by

the average of separate school marks. The relationship between these two traits among 20 high school seniors might be as pictured in this diagram.

		ACHIEVEMENT	
		Below Average	Above Average
ABILITY	Above Average	///	//// /
	Below Average	//// //	//

Here eight students are above-average in ability and are also above-average in achievement; seven students are below-average in both ability and achievement; three students are above-average in ability but below-average in achievement; and two students are below-average in ability and above-average in achievement. This diagram shows in simple form that there is some degree of relationship between these two traits among this group of students. It portrays a fact that is obviously valuable to the teacher.

But the teacher may want to find out how far above or below the respective averages a given student actually is. Take, for example, a student whose tally appears in the upper right-hand box of the diagram. This student, say, is at the top of the group of 20 students in ability, but is just barely above the average of the group in achievement. He may well represent a more serious problem of underachievement than the student who is just barely above-average in ability and just barely below-average in achievement.

DOES THE SCATTER-DIAGRAM AID INDIVIDUAL ANALYSIS?

The teacher may want to know more accurately where a particular student stands in two given traits and what relationship exists between these traits for all students in his group. To get this kind of information, the teacher must state the amount of each trait in more nearly exact quantities than above-average or below-average. He must also plot these amounts on a diagram like that in Figure 5 (page 44), known as a scatter-diagram.

TABLE 10

PARTIAL LIST OF SENIOR STUDENTS IN HIGH SCHOOL A AND THEIR SCHOLASTIC
APTITUDE TEST SCORES AND HONOR POINT RATIOS OR GRADE AVERAGES

Name of Student	A.C.E. Test Score*	Honor Point Ratio or Grade Average
□ 1. Adams, John	114	3.55
2. Anderson, Anna	66	2.25
3. Arndt, George	65	3.00
4. Bennett, Virginia	77	2.58
△ 5. Brown, Fred	39	1.58
6. Butler, June	56	2.08
○ 7. Chalmers, Mary	87	1.50
8. Chamberlain, Richard	31	2.58
9. Collins, Diana	56	2.75
10. Cummins, Lois	34	2.00
11. Daly, Robert	94	3.00
× 12. Daniels, Henry	41	3.41
13. Donaldson, David	65	2.84
14. Decker, Harriet	79	2.53
15. Dunn, Muriel	36	2.33
↓ 16. Emerson, Bill	110	2.59

*American Council on Education Psychological Examination for High School Students

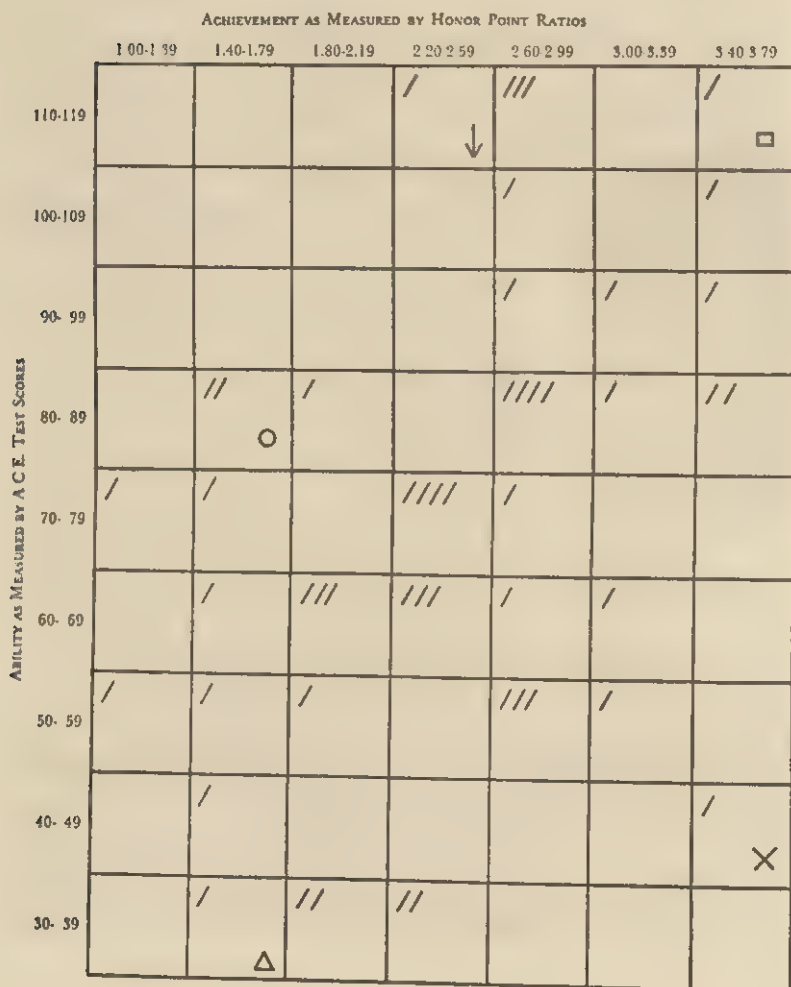
The first step in the construction of a scatter-diagram is the collection and organization of data. This step is illustrated in Table 10. It lists only 16 of the 50 senior students in the group. The scatter-diagram appearing in Figure 5 was based on a table which listed all 50 students and their scores and honor points. For purposes of identifying five of these students on the scatter-diagram, Table 10 gives distinctive symbols for them—Adams, Brown, Chalmers, Daniels, and Emerson.

The next step is to draw the framework of the scatter-diagram, and to write in the class intervals for each of the two scales. In Figure 5 the horizontal scale along the top of the diagram is used to plot the classroom achievement of each student in terms of his honor point ratio or grade average. On this scale the value of 1.00 equals a D average; 2.00, a C average; 3.00, a B average; and 4.00, an A average. The vertical scale at the left is used to plot the raw scores made by students on the A.C.E. examination, a test of scholastic aptitude.

After the foregoing scales are entered on the margins of the scatter-diagram, the next step is to enter the tallies. On the scatter-diagram, one tally is plotted or entered in the appropriate box for the pair of scores made by each student in the group

of 50 high-school seniors. To see how this is done, look again at Table 10. Take the first student, Adams. His test score is 114; his honor point ratio is 3.55. Therefore, in Figure 5, his tally is entered in the box indicated by the score 110-119 and the honor point ratio 3.40-3.79. The square symbol shows the

FIGURE 5
SCATTER-DIAGRAM OF A.C.E. TEST SCORES AND HONOR POINT RATIOS
OF 50 STUDENTS IN SCHOOL A



box where the tally representing the pair of scores made by Adams is plotted. Brown has a score of 39 on the test of scholastic aptitude and a grade average of 1.58. The triangle shows the box where the tally for his pair of scores is entered.

The tally with the circle symbol near it indicates Mary Chalmers' pair of scores. She made 87 on the test of scholastic aptitude, and she has an honor point ratio of 1.50, a D+. The tally with the cross near-by indicates Henry Daniels' pair of scores. He has a test score of 41 and an honor point ratio of 3.41 (a little better than a B). Finally, Bill Emerson, with the arrow symbol near his tally, scores 110 on the aptitude test and has an honor point ratio of 2.59, somewhat above a C average.

For each of the other students in the group of 50 in High School A, a tally was made in the box at the right of the interval in which his ability score was located and under the interval in which his honor point ratio fell. The completed scatter-diagram in Figure 5 shows the distribution of the 50 students according to their pairs of scores.

A careful inspection of this diagram reveals a general tendency for low scores on the test to accompany low honor point ratios, and for high scores on the test to accompany high honor point ratios. In other words, most of the tallies could be enclosed by an ellipse which extends from the lower left-hand corner to the upper right-hand corner of the diagram. This indicates some positive relation between the two variables—test scores and honor point ratios.

The data shown in Figure 5 are again displayed in Figure 6 (page 46). The latter includes the results of computations that help provide a background for understanding what a coefficient of correlation really means.

At the right and at the bottom of the scatter-diagram in Figure 6, the number of cases or frequency of scores in each class interval has been written. The frequencies in the column at the right show the distribution of students according to their scores on the A.C.E. test. The frequencies in the row at the bottom show the distribution of students according to their honor point ratios.

Two pairs of heavy lines have been drawn through the body of the diagram. One pair of lines bounds the class interval in

which the mean of all the test scores lies. The other pair bounds the class interval in which the mean of all the honor point ratios lies.

FIGURE 6

SCATTER-DIAGRAM OF A.C.E. TEST SCORES AND HONOR POINT RATIOS OF 50 STUDENTS IN SCHOOL A, SHOWING MEAN AT EACH INTERVAL

	ACHIEVEMENT AS MEASURED BY HONOR POINT RATIOS							FRE- QUENCY	MEAN ACHIEVE- MENT WITH IN EACH CLASS IN- TERVAL OF ABILITY
	1 00 1 39	1 40 1 79	1 80 2 19	2 20 2 59	2 60 2 99	3 00 3 39	3 40 3 79		
110 119				/	///		/	5	2 92
100 109					/		/	2	3 38
90 99					/	/	/	3	3 15
80 89		//	/		///	/	//	10	2 64
70 79	/	/		///	/			7	2 22
60 69		/	///	///	/	/		9	2 30
50 59	/	/	/		///	/		7	2 36
40 49		/					/	2	2 41
30 39		/	//	//				5	2 07
FREQUENCY	2	7	7	10	14	4	6	50	
MEAN ABILITY WITHIN EACH CLASS INTERVAL OF ACHIEVE- MENT	65	65	57	68	84	76	86		

Within each class interval of the scale of honor point ratios and of the scale of test scores, furthermore, the mean honor point ratio or the mean test score within that interval has been computed. For example, the five students making test scores from 30 through 39 made a mean honor point ratio of 2.07; the two students making test scores from 40 through 49 made a mean honor point ratio of 2.41; and so on through each ability interval. Also to illustrate, the seven students making honor point ratios of 1.40-1.79 made a mean test score of 65. The 14 students with honor point ratios of 2.60-2.99 made a mean test score of 84.

In Figure 6, study the means which appear in the column at the right and in the row at the bottom. There is a general tendency for the students with higher ability to get the higher honor point ratios. Also, there is a general tendency for students with higher honor point ratios to have higher ability. However, the co-relation between these two traits is not perfect. For example, the five students in the top ability interval make a mean honor point ratio that is somewhat lower than the mean honor point ratio earned by the two students in the next-to-the-top ability interval. Perhaps these five top-ability students are not working as hard or effectively as they should.

CAN THE SCATTER-DIAGRAM BE USED FOR PREDICTION?

The foregoing section raises the practical question: How can the scatter-diagram showing the relationship between two traits be used to forecast a student's achievement? The relationship depicted in such a diagram may be employed to estimate future behavior from past behavior. Suppose that the scatter-diagram in Figure 6 represents the results of an ability test given to 50 students at the beginning of their senior year plotted against the mean grades earned by these same students during that entire school year. This diagram can be employed to estimate what grades to expect from the next senior class.

Suppose that early in the school year the new senior class is given the same ability test as was given to the former senior class. From the scatter-diagram of the former class it can be seen that 21 of the 27 students who were at or above average in

ability were also at or above average in grades. Thus, there are 21 chances out of 27, or, said another way, there is a 78-22 chance that the new seniors who test above-average in ability will earn above-average grades.

At the lower end of the two scales, 13 out of 23 of the old seniors who were below-average in ability were also below-average in grades. Thus, there are 13 chances out of 23, or a 57-43 chance, that the new seniors who test below-average in ability will earn below-average grades.

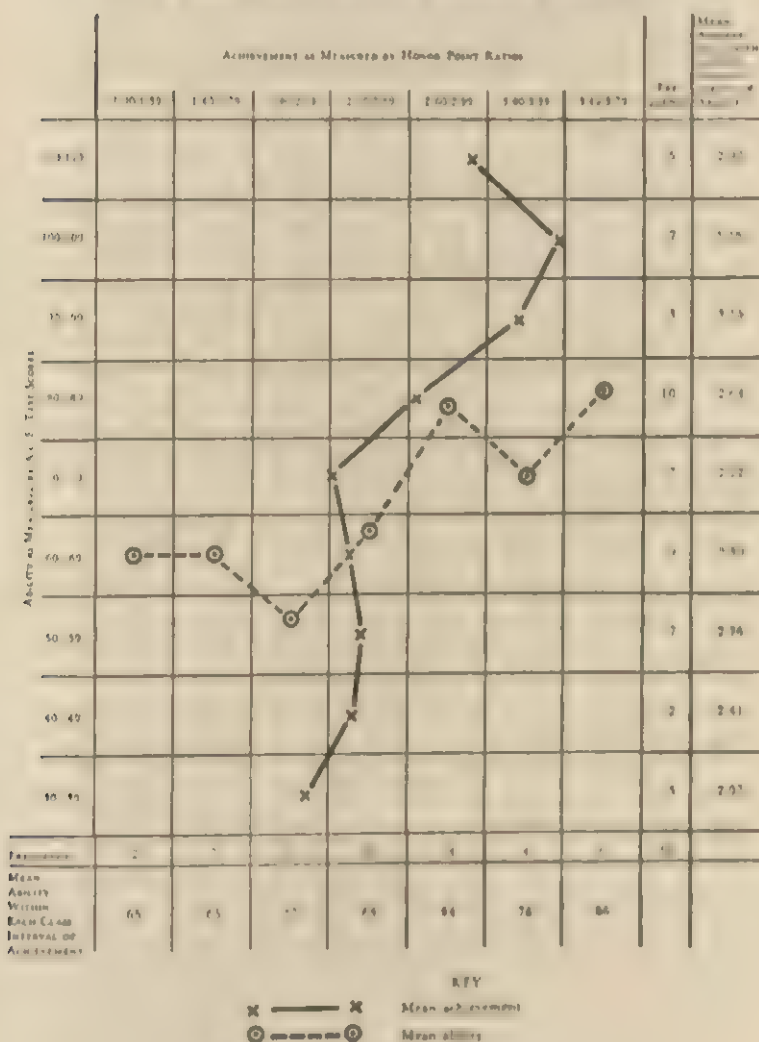
Now consider further the data presented in the scatter-diagram for the 50 seniors. According to these data, either the test scores or the honor point ratios could be used to predict the other trait. Thus, if it were desirable to estimate the test scores of the seniors from their honor point ratios, it would be possible to do so within known limits of accuracy.

The example just given illustrates the important point that, from a sample of past behavior or present behavior (such as a test), the counselor or teacher can predict a sample of behavior that will be measured at some future date. Samples of behavior such as test scores or honor point ratios, however, are far from perfect as predictors. This is made clear in Figure 7. Here, the average achievement within each ascending class interval of the ability scale is plotted as an X-mark. These X marks are connected with straight solid lines. Here also the average ability within each ascending class interval of achievement is plotted as a point. These points are connected with straight broken lines.

In Figure 7, if it were true for all students that the higher their test scores the higher their honor point ratios, then the solid lines and the broken lines each would be a continuous straight line, and the two straight lines would overlap, as shown in Figure 8 on page 50. However, in Figure 7 both lines are jagged rather than straight because the correlation between the two traits is not perfect. Look, for example, at the five top-ranking seniors in the highest class interval of ability, 110-119. The mean of their honor point ratios is less than that of the two seniors in the next lower class interval of ability, 100-109. It is also less than that of the three seniors in the 90-99 interval of ability.

FIGURE 7

MEAN OF EACH INTERVAL IN DISTRIBUTION OF A.C.E. TEST SCORES
AND HONOR POINT RATIOS OF 50 STUDENTS IN SCHOOL A

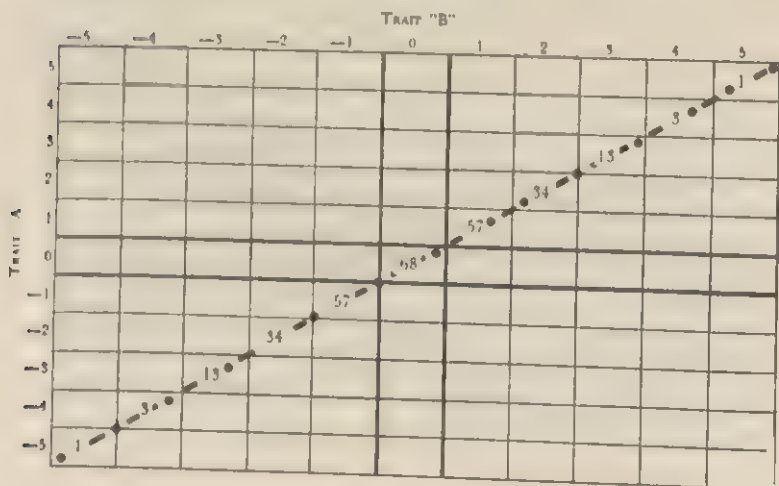


Clearly, in Figure 7, variations in one trait are not accompanied by equivalent and uniform variations in the other trait. These deviations from expected performance, as noted in the case of the five top-ability seniors, may be due to such a factor as this: variations among individual students in work habits, motivations, or past performance. These deviations may also be due to errors in the test which tend to give incorrect measurements of the relative standing of each and all students; or to errors in the grading system which tend to give incorrect measurements of the relative achievements of each and all students.

WHAT DOES A COEFFICIENT OF CORRELATION MEAN?

Now assume that such "error" factors did not enter into the relationship between ability and achievement as pictured in Figure 7. Then the diagram for that group of 50 students would appear as in Figure 8. This diagram is an example of perfect positive correlation between the two traits, "A" and "B." Within it the mean of "A" and the mean of "B" each appears as 0. The dash line and the dotted line coincide.

FIGURE 8
DIAGRAM SHOWING PERFECT POSITIVE CORRELATION BETWEEN
TRAIT "A" AND TRAIT "B"



The diagonal line in Figure 8 extends from the lower left-hand corner through the meeting place of lines drawn through the zero points representing the means of the two distributions to the upper right-hand corner. On this line lies every pair of scores for the two traits. Therefore, an increase of one unit in trait "A" is accompanied by an increase of one unit in trait "B," and vice versa. There is no irregular or halting progress of increases as in the comparable lines in Figure 7.

Consider next two traits that are unrelated or that vary independently of each other. In this case the pairs of scores made by persons in the group will distribute themselves through the boxes of the diagram as shown in Figure 9.

FIGURE 9

DIAGRAM SHOWING LACK OF CORRELATION BETWEEN TRAIT "A" AND TRAIT "B"

		TRAIT "B"										
		-5	-4	-3	-2	-1	0	1	2	3	4	5
TRAIT "A"	5					2	3	2				
	4					3	2	1	2			
	3			3	1	1	1	2	2	1		
	2		1	2	2	8	6	8	1	2	2	
	1	1	2	3	8	8	12	10	6	4	1	1
	0	1	1	6	8	9	15	9	10	3	4	
	-1		2	6	5	9	10	8	6	5	2	1
	-2	1	2	1	3	6	8	7	3	1	1	1
	-3				2	3	2	3	1	1		
	-4				1	2	3	2	1			
	-5					2	1	2				

In Figure 8, if the person's standing on one trait is known, his standing on the other trait can be predicted perfectly. However, in Figure 9, knowing a person's standing in either trait tells nothing about his standing in the other. No co-relation or correlation between traits "A" and "B" exists.

As several examples have shown, the relationship between two variable traits can be estimated roughly through preparation and study of a scatter-diagram. But the degree of that

relationship can be determined accurately only through the statistical procedure known as the computation of a coefficient of correlation. Because such a computation involves the use of a formula that is beyond the scope of this book, the interested reader should consult any standard textbook on statistical methods. The titles of several of these books appear in the suggested readings at the end of this chapter.

For present purposes, a coefficient of correlation can be conceived as an index of the tendency for pairs of measures to vary together. The greater the tendency the higher the correlation. This coefficient takes into account all pairs of scores for students or other individuals within the measured group.

Although guidance workers may seldom have to calculate coefficients of correlation, all of them should understand the meaning of these coefficients because such coefficients appear frequently in guidance literature. Ordinarily statisticians employ the *product-moment* method to compute a *coefficient of correlation*; they designate this coefficient by the symbol r .

HOW SIGNIFICANT IS A COEFFICIENT OF CORRELATION?

The significance of a particular coefficient of correlation, which shows the degree of relationship between two variable traits, is expressed in two ways—as a verbal description of its relative size and as an indication of its predictive power. Verbal descriptions of coefficients of correlation appear as follows:

0.80 and up	very high correlation
0.50 to 0.79	substantial correlation
0.30 to 0.49	some correlation
0.20 to 0.29	slight correlation
0.00 to 0.19	practically no correlation

Although descriptions of correlation coefficients are valuable, they are relatively crude. They do not take into account many important considerations.

In interpreting the significance of a given correlation coefficient, the crucial question is: Does the coefficient reflect a true relationship, or is it a spurious one? In trying to answer this question it should be kept in mind that the significance of

any coefficient of correlation depends in large measure upon the size of the sample upon which it is based. That significance also depends upon the representativeness of the constituents of that sample. In the discussion of the mean, it was pointed out that out-of-line cases in a small sample can drastically affect the mean. Such cases can also greatly affect the coefficient of correlation.

Statisticians have devised methods for taking into account the size of the sample in determining the significance of a correlation coefficient. They have, for instance, developed Table 11. Using this table, the counselor can quickly determine in an approximate way the significance of any given coefficient of correlation between two variables. To illustrate, consider the examples given next.

TABLE 11
SIGNIFICANCE OF CORRELATION COEFFICIENTS
BASED ON VARIOUS-SIZED SAMPLES

NUMBER OF CASES IN SAMPLE	MAGNITUDE OF CORRELATION COEFFICIENTS REQUIRED TO BE SIGNIFICANT	
	at .01 level	at .05 level
3 or less	1.00	.997
10	.77	.63
20	.56	.44
30	.46	.36
40	.39	.30
50	.35	.27
60	.33	.25
70	.30	.23
80	.28	.22
90	.27	.21
100	.25	.20
200	.18	.14
300	.15	.11
400	.13	.10
500	.12	.09
1000	.08	.06

In the manual for the *Kuder Preference Record - Vocational*, the counselor will find that scores of 100 men on Form BB were correlated with their scores on Form BM. On the Mechanical scale, the correlation coefficient was found to be .985. Is this a significant correlation? Reference to Table 11 indicates that entries at .01 and .05 level of significance for a

sample containing 100 cases are .25 and .20, respectively. This means that only once in 100 repeated correlations of similar groups of paired scores would a coefficient as large as .25 appear by accident if the true correlation were actually .00. Only five times in a hundred would the coefficient be as large as .20 under these conditions. Therefore, it is clear that the coefficient of .985 is very significant, since it is much larger than .25.

Also in the Kuder manual, the counselor will note that the correlation coefficient between the Mechanical scores and the Computational scores was found to be .022 in a sample of 100 men. For 100 cases, the entries in Table 11 are again .25 and .20 at the .01 and .05 levels, respectively. The obtained coefficient of .022 is less than .20. This means that in more than 5 times in 100, a coefficient as large or larger would be found by the accident of sampling, even though the true correlation is .00.

Even so, because the obtained coefficient was only .022, the counselor can conclude with confidence that there is little relationship between the Mechanical scores and Computational scores on the *Kuder Preference Record—Vocational*. This is a desirable finding, since the counselor wants the mechanical scores and the computational scores to be as independent as possible. If they are, the tests measure different aspects of the counselee's interest.

TABLE 12
PREDICTIVE EFFICIENCY OF COEFFICIENTS OF CORRELATION
OF VARYING MAGNITUDE

Correlation Coefficient	Percentage Increase in Predictive Efficiency	Chances in 100 of Predicting at-or-above and at-or-below Average in Future Behavior
0.00	0.0	50-50
0.10	0.5	50.25-49.75
0.20	2.0	51-49
0.30	5.0	52.5-47.5
0.40	8.0	54-46
0.50	13.0	56.5-43.5
0.60	20.0	60-40
0.70	29.0	64.5-35.5
0.80	40.0	70-30
0.90	56.0	78-22
0.95	69.0	84.5-15.5
0.98	80.0	90-10

Another way of judging the significance of a coefficient of correlation is by examining its predictive value. This value is indicated in Table 12, whose figures give the predictive efficiency of coefficients of correlation of various sizes. The figures in this table are very useful to counselors who wish to make predictions. For example, suppose the correlation coefficient between the students' scores on a scholastic aptitude test given in high school and their average college marks is $+.60$. Then the chances are about 60 to 40 that a student with an above-average test score will make above-average college marks. In other words, suppose that the counselor knows a student's test score; also, that he knows that these scores and marks correlate at $+.60$. With this knowledge, the counselor can improve his prediction by about 20 percent over what his prediction would be if he did not have such information.

The figures appearing in Table 12 will be a surprise for those persons who tend to be dogmatic about tests, test scores, and predictions therefrom. Even those tests showing high correlations with later performance have a noticeable margin of error in prediction.

WHAT IS THE RANK-DIFFERENCE METHOD OF CORRELATION?

One of the simplest ways to compute a coefficient of correlation is through the rank-difference method. It yields a coefficient known as *rho* (ρ). The method is best suited to a group of 30 cases or less. The formula for computing *rho* is:

$$\rho = 1 - \frac{6\sum D^2}{N(N^2 - 1)}$$

In this formula,

D = the difference between the two ranks assigned to each student; that is, his rank on the dexterity test minus his rank on shop grades

D^2 = the square of each difference (Note that each D^2 is a positive number.)

$\sum D^2$ = the sum of all the squared differences (In the example, this sum is 278.)

N = number of cases (In the example, this number is 15.)

TABLE 13

EXAMPLE OF THE RANK-DIFFERENCE METHOD OF COMPUTING
A COEFFICIENT OF CORRELATION

Name	Score in Seconds on Dexterity Test	Rank on Test	Shop Grades in Percent	Rank on Shop Grades	Difference in Ranks <i>D</i>	Squared Difference <i>D</i> ²
James Roberts.....	324	1	94	1	0	0
Frank Applegate.....	330	2	89	3	-1	1
Taylor Huff.....	352	3	74	10	-7	49
Jackson Quilk.....	367	4	90	2	2	4
Adams Wabash.....	375	5	86	5	0	0
Louis Unos.....	384	6	70	11	-5	25
Stanley Jacobson.....	390	7	87	4	3	9
Rasmus Gordski.....	401	8	67	13	-5	25
Asker Watt.....	412	9	65	15	-6	36
Solomon Kingsley.....	422	10	80	7	3	9
Harry Chesters.....	429	11	66	14	-3	9
Ralph Barney.....	440	12	75	9	3	9
Istan Bull.....	470	13	84	6	7	49
Benjamin Cripps.....	481	14	68	12	2	4
Armstrong Legg.....	516	15	77	8	7	49
<i>N</i> = 15						$\Sigma D^2 = 278$

$$\rho = 1 - \frac{6 \times 278}{15(225 - 1)}$$

$$= 1 - \frac{6 \times 278}{15(224)}$$

$$= 1 - \frac{1668}{3360}$$

$$= 1 - .4964$$

$$= .504$$

As illustrated in Table 13 for a group of 15 students, here are the steps in computing *rho*. List the names of the students in the order of their rank on the scores made in the finger dexterity test. Then enter their scores and their ranks. Next, at the right of each student's name, enter the percent indicating his shop grades. Then rank these grade percents from high to low. Next, compute the difference for each pair of ranks. Square each difference. Total the squared differences to obtain the sum of *D*².

In the remaining computations, shown at the bottom of Table 13, ρ is found to be .504. The significance of this correlation between dexterity test scores and shop grades can be determined by referring again to Table 11 and Table 12.

OF WHAT VALUE IS FACTOR ANALYSIS?

As counselors read literature dealing with the analysis of the individual, they sometimes find references to factor analysis. Factor analysis as applied to human behavior is somewhat analogous to quantitative analysis in chemistry. In the latter, a compound is analyzed to discover what basic elements and how much of these elements make up the compound.

To show the values of factor analysis, suppose that the counselor in high school gave a test of scholastic aptitude and one of achievement in history. Between these two variables the correlation coefficient, say, is .55. Assume also that he gave an achievement test in arithmetic; he finds that the correlation between this test and the scholastic aptitude test is .45. Then he determines that the correlation between the history test and the arithmetic test is .50. These coefficients of correlation are presented in Table 14.

TABLE 14
INTERCORRELATIONS AMONG THREE TESTS

	HISTORY	ARITHMETIC
Scholastic Aptitude	.55	.45
History	—	.50

As was mentioned earlier, a correlation coefficient is an index of relationship between two variables (in this case, test scores). If this coefficient is both high and positive, the counselor can safely say that the students who make high scores on one test tend to make high scores on the other test. He can also say that the students who make low scores on one test tend to make low scores on the other. But the correlation coefficient in and of itself does not indicate whether or not a common factor is measured by the two tests.

The common factor measured by two different tests may be determined by so-called "face inspection." Using this technique,

the counselor looks for things which the two tests have mutually. To illustrate, in two tests, he might find many items which measure verbal reasoning, although one test is designed to measure knowledge of a particular subject of study. The vocabulary items of a scholastic aptitude test may be similar to the vocabulary items of an English achievement test. And the quantitative-thinking items in the scholastic aptitude test may be very much like the reasoning problems in an arithmetic achievement test. In addition to items which are similar, two different tests may have other *common factors*. If both tests are timed, this common factor may be speed of working. If both tests require clerical accuracy, they in part measure this factor.

If the same or similar factors are measured by two different tests, they are called *common factors*. If different factors are measured by these tests, they are called *unique factors*.

Through factor analysis, psychologists have contributed much to the understanding of tests and of human behavior. In making such an analysis, they prepare a table of intercorrelations like Table 14, but for a larger number of tests. They then analyze the correlation coefficients statistically to determine the kinds of common and unique factors which lie behind the relationships expressed by these coefficients. According to their analysis, two tests which are highly correlated usually are measuring a common or similar factor; while two tests which have a low intercorrelation are generally measuring unique or different factors.

Most counselors lack the time and training to undertake factor analyses of the tests which they use. They can profit, however, by using the factor analyses prepared by experts in test-making, test-using, and test interpretation. Through studying these analyses, counselors can select tests which measure the varied factors considered most important in working with individual students. Also, they can avoid unnecessary duplication of tests.

With further reference to factor analysis of tests, it should be pointed out, the findings therefrom are based almost solely upon statistical procedures. Therefore, these findings should be used only after they have been checked with common-sense analysis. Mathematical analysis of the intercorrelations among

the three tests as given in Table 14 may suggest that these tests measure certain common factors. Even so, the counselor should ask himself such questions as the following: Do these tests really measure what they purport to measure? Are there other important factors not measured by these tests?

IS THE DIFFERENCE BETWEEN TWO GROUPS SIGNIFICANT?

Chapter 2, it will be recalled, presented the statistical procedures for computing measures of central tendency and measures of variability for a given group of students. The present section describes methods for determining the significance of the difference between two measures of central tendency within a given group or between two or more groups.

To illustrate these methods, consider the following data collected and computed by a high-school counselor. This counselor found that the 130 students who passed mathematics had a mean score of 75 and a standard deviation of 10 on a scholastic aptitude test. The 20 students who failed mathematics, however, had a mean score of 70 and a standard deviation of 16 on that same aptitude test.

After the counselor obtained these data, he faced the problem of interpreting them. The data indicated, for instance, that the students who passed mathematics made a higher mean score on the scholastic aptitude test than the students who failed this subject. But was the difference between the two means significant? Was this difference significant enough to justify the counselor in discouraging those with low aptitude scores from taking further courses in mathematics? In order to answer these questions, the counselor must understand the statistical techniques used to determine the significance of the difference between the means made by the two groups.

Suppose that a counselor has the scores of 1000 students on a single test. He computes the mean of these 1000 scores. This may be called the master mean. The counselor then selects at random the scores of 100 students out of the 1000, and calculates the mean of this group of scores. He puts these 100 tests back in the pile. He then selects another random sample of 100 and calculates the mean of this group of scores. If he does this many

times, he has a number of means, each based on a sample of 100 scores. But not all these means are the same. When the counselor makes a frequency distribution of these means, he finds a few high means, a few low means, and a good many means at or near the master mean of the 1000 scores. In the same way that the counselor computes the mean of one sample of 100 scores, he computes the mean of the means obtained from all his samples. This mean of the sample means will be nearly the same as the master mean obtained from the 1000 scores.

Another example may be useful. In Chapter 2, the mean of the scores for the sample of 50 seniors in High School A on the ability test was 73.6. But what would be the means of the scores made by samples of 50 high-school seniors drawn from other schools? Would the means for these other samples also be 73.6? Some of these means would be the same, or about the same; others would be higher; and still others would be lower. The mean of these means gives a reasonably close approximation of the master mean for *all* high-school seniors in the United States, assuming that all high-school seniors were given the same test.

The group of 50 seniors in High School A is a small sample of the total population of high-school seniors. The mean of this sample from High School A and the means from other high schools may vary somewhat from the true mean of the entire high-school population. But if there are samples from enough high schools, the means of these samples will tend to vary in a regular or symmetrical way around the true mean of the whole high-school population. In other words, the frequency distribution which shows these sample means in graphic form will approach the so-called "normal curve."

Statisticians have made careful studies of the properties of this "normal curve," and they know that when measures are "normally" distributed: (1) About 68 percent of all measures lie within the range between these two points—the mean-minus-one standard deviation and the mean-plus-one standard deviation. (2) About 95 percent of all measures lie within the range between these two points—the mean-minus-two standard deviations and the mean-plus-two standard deviations. (3) About 99 percent of all measures lie within the range between these

two points—the mean-minus-2.6 standard deviations and the mean-plus-2.6 standard deviations. (4) About 99.7 percent of all measures lie within the range between these two points—the mean-minus-3 standard deviations and the mean-plus-3 standard deviations. This knowledge of the properties of the “normal curve” enables the counselor to estimate the significance of differences between means. Its application will be presented in the following discussion.

Consider further the example of the counselor who has obtained 1000 scores on a given test from as many high-school seniors. Assume that he also knows the scores made by all high-school seniors in the United States on the same test. Suppose that the counselor draws at random 50 scores from the 1000 scores at hand. He can then compute the mean and standard deviation of this distribution of 50 scores. He can next draw other samples of 50 scores each and compute the mean and standard deviation of each of these samples. The means of these samples will not be the same. Many will be the same or about the same; a few will be quite different in amount. In other words, the sample means will be distributed over a range of scores. If enough samples are drawn in a truly random fashion, the means of these samples will be distributed according to the normal curve of distribution. When the mean and the standard deviation of this distribution of means are computed, they are called, respectively, *the mean of the distribution of means* and *the standard deviation of the distribution of means*. Usually this standard deviation is referred to as the *standard error of the mean*.

Now suppose that instead of drawing many samples of 50, all scores for all high-school seniors are tallied. The resulting distribution of all these scores will approximate a normal distribution. Its mean and standard deviation are called simply the mean and the standard deviation of a distribution of scores. Since all high-school seniors in the United States are included, the statistics are properly called *population statistics*.

Rarely can the mean and standard deviation of a total population be obtained. Hence, the standard error of the mean must be estimated from a single sample. This can be done because it is known that the standard error of a mean (com-

puted from a distribution of sample means) will be equal to the standard deviation of the population (computed from a distribution of all scores in that population) divided by the square root of the number of cases in the population. The formula is:

$$\begin{array}{l} \text{Standard error} \\ \text{of the mean of} \\ \text{the population} \end{array} = \frac{\text{Standard deviation of the population}}{\sqrt{\text{Number of cases in the population}}}$$

Unfortunately, the standard deviation of the population, as pointed out before, is rarely available. Consequently, it is necessary to estimate this. The standard deviation of the sample is the best available estimate. The foregoing formula then is written thus:

$$\begin{array}{l} \text{Standard error} \\ \text{of the mean of} \\ \text{the sample} \end{array} = \frac{\text{Standard deviation of the sample}}{\sqrt{\text{Number of cases in the sample}}}$$

This formula can be applied to the data calculated in Chapter 2. The sample of 50 scores from High School A had a mean of 73.6 and a standard deviation of 22.54. Using 22.54 and 50 in the formula, the standard error of the mean is found to be:

$$\text{Standard error of the mean} = \frac{22.54}{\sqrt{50}} = \frac{22.54}{7.071} = 3.19$$

As stated previously, it is known that 99.7 percent, or 997 out of 1000, of all sample means lie within the range between these two points—the true mean minus three standard errors of that mean and the true mean plus three standard errors of that mean. Therefore, it can be said that: "It is very unlikely that the sample of 50 scores from High School A was drawn from a population with a mean on this test of less than 64.03 or greater than 83.17. In fact, the chances are only about 3 in 1000 that our sample, was drawn from a population whose mean lies beyond these limits."

The limits, 64.03 and 83.17, were calculated as follows: The mean of the sample (73.60) — 3 standard errors of the mean (3.19) = 73.6 — 9.57 = 64.03

The mean of the sample (73.60) \pm 3 standard errors of the mean (3.19) $= 73.6 \pm 9.57 = 83.17$

The significance of a difference between means. With this discussion of the standard error of the mean as background, the reader's attention is now directed to the technique of determining the significance of a difference between means. The need for such a technique was seen in the example of the mean scholastic aptitude test scores of students who passed or failed mathematics. Additional problems such as the following can also be considered.

1. The seniors in High School A make a mean score of 73.6 on a certain test of scholastic aptitude. The seniors in High School B make a mean score of 64.0 on the same test. Does this difference in means indicate that School A drew its students from a "brighter" level of the total population?

2. On Test X girls make a higher mean than do boys. Does this imply that girls are always better in the tasks measured by Test X?

3. On a personality test a group of known extroverts makes a mean score that is higher than that made by a group of known introverts. Does this indicate that the test will always separate the extroverts from the introverts?

To answer these questions the groups must be regarded as samples of larger population groups. An example will clarify the point. In Chapter 2 the following statistics for High School A were obtained:

Mean of Sample A $= 73.6$

Standard deviation of Sample A $= 22.54$

Sample A $=$ a sample of 50 seniors from High School A

Population A $=$ population from which High School A draws its seniors

For purposes of further illustration, assume that the following data were obtained from High School B:

Mean of Sample B $= 64.0$

Standard deviation of Sample B $= 26.53$

Sample B $=$ a sample of 40 seniors from High School B

Population B $=$ population from which High School B draws its seniors

It was seen that the mean of Sample A might vary some-

what from the mean of Population A. The same thing would, of course, be true of Sample B and Population B. But it is also possible that the difference between the means of Sample A and Sample B may be due to chance factors alone, *even though* the means of Population A and Population B were exactly the same. The problem, then, is to find out if the difference found between the mean of Sample A and the mean of Sample B may be due to chance factors.

To solve the problem, proceed as follows:

First, set up a hypothesis—to be supported or rejected by the evidence. This hypothesis might be summed up in this statement:

The difference between the mean of Population A and the mean of Population B is zero. In other words, Population A and Population B have means which are the same.

Assuming that this statement is true, then a large number of successive pairs of scores can be drawn from these two populations, thus:

$$\text{Score } A_1 - \text{Score } B_1 = \text{Difference}_1 \text{ or } 61 - 61 = 0$$

$$\text{Score } A_2 - \text{Score } B_2 = \text{Difference}_2 \text{ or } 62 - 58 = 4$$

$$\text{Score } A_3 - \text{Score } B_3 = \text{Difference}_3 \text{ or } 74 - 79 = -5$$

$$\text{Score } A_4 - \text{Score } B_4 = \text{Difference}_4 \text{ or } 80 - 80 = 0$$

$$\text{Score } A_5 - \text{Score } B_5 = \text{Difference}_5 \text{ or } 60 - 58 = 2$$

These differences are distributed in a regular way around our assumed difference of zero between the means of Population A and of Population B. Statisticians call this difference between means, the *mean difference*. Some differences are positive values, some are negative values, but the greatest number of differences are zero. Not only does the distribution of differences center around a mean difference of zero, but the distribution of differences tends to take the form of a normal curve of distribution.

Therefore, if the standard deviation of these differences is calculated (commonly known as the *standard error of the difference*), then it will be known: (1) About 68 percent of the differences fall in the range between these two points—the mean difference minus one standard error of the difference and the mean difference plus one standard error of the difference. (2) About 95 percent of the differences fall in the range be-

tween these two points—the mean difference minus two standard errors of the difference and the mean difference plus two standard errors of the difference. (3) About 99 percent of the differences fall in the range between these two points—the mean difference minus 2.6 standard errors of the difference and the mean difference plus 2.6 standard errors of the difference. (4) About 99.7 percent of the differences fall in the range between these two points—the mean difference minus 3 standard errors of the difference and the mean difference plus 3 standard errors of the difference.

Notice that the percentages of all differences within each of the given limits set by the standard error of the difference are the same as the percentages given on pages 60-61. These percentages based on standard deviations measured from the mean apply to every normal curve. That is one of the principal reasons why statisticians find the standard deviation so highly useful.

Second, calculate the standard error of the difference. For this, statisticians have developed the following formula:

$$\text{Standard error of the difference} = \sqrt{\frac{(\text{Standard error of the mean, Population A})^2}{\text{Population A}} + \frac{(\text{Standard error of the mean, Population B})^2}{\text{Population B}}}$$

Notice that the formula for the standard error of the difference uses the *square* of the standard error of the mean. The formula of the latter, it will be recalled, is:

$$\text{Standard error of the mean} = \frac{\text{Standard deviation of the sample}}{\sqrt{\text{Number of cases in the sample}}}$$

When the standard error of the mean is squared, the formula is:

$$(\text{Standard error of the mean})^2 = \frac{(\text{Standard deviation of the sample})^2}{\text{Number of cases in the sample}}$$

The quantity “(standard error of the mean)²” for each sample is substituted in the formula for standard error of the difference. Then the formula of the latter is:

$$\frac{(\text{Standard deviation, Sample A})^2}{(\text{Number in Sample A})} + \frac{(\text{Standard deviation, Sample B})^2}{(\text{Number in Sample B})}$$

When the numerical values for Sample A and for Sample B are inserted in the foregoing formula, the computations are as follows:

$$\begin{aligned}
 \text{Standard error of the difference} &= \sqrt{\frac{(22.54)^2}{50} + \frac{(26.53)^2}{40}} \\
 &= \sqrt{\frac{508.05}{50} + \frac{703.84}{40}} \\
 &= \sqrt{10.161 + 17.596} \\
 &= \sqrt{27.757} \\
 &= 5.27
 \end{aligned}$$

Third, ask this question: Assuming the true difference between the mean of Population A and the mean of Population B to be zero, what are the chances of getting a difference as large as the mean of Sample A (73.6) minus the mean of Sample B (64.0)? In short, what are the chances of getting a difference as large as 9.6?

To determine the foregoing, the critical ratio is computed. Its formula is:

$$\text{Critical ratio} = \frac{\text{Obtained difference between the means of the samples} - \text{True difference between the means of the two populations}}{\text{Standard error of the difference}}$$

Assuming that the difference between the means of the two populations is zero, the formula for finding the ratio is:

$$\text{Critical ratio} = \frac{\text{Obtained difference between the means}}{\text{Standard error of the difference}}$$

In the example, the computation is as follows:

$$\text{Critical ratio} = \frac{9.6}{5.27} = 1.82$$

Opinions vary somewhat as to how large the critical ratio should be before it can be accepted as indicating that a dif-

ference *actually* exists between the means of the two samples. A critical ratio of 2.6, for instance, indicates that only one time in 100 would a difference as large as the sample difference be obtained by chance alone, if there were no actual difference between the means of the populations sampled. In the present example, the critical ratio of 1.8 indicates that in seven cases out of 100 the difference between the means of two groups of high-school seniors will be as great as or greater than 9.6, even if there were no true difference between the means of the two populations from which the seniors in High School A and High School B were drawn.

There is no absolute method of deciding how large the critical ratio must be before concluding that High School A actually does draw its seniors from a population which is "brighter" than the population from which High School B draws its students, and that the hypothesis that Populations A and B are really similar in scholastic aptitude is therefore wrong.

In this matter, however, the great majority of statisticians tend to be conservative. They are well aware of the errors they can make in their efforts to select a sample which is truly representative of an entire population. Statisticians commonly believe that a critical ratio must be 2.00 or above to be considered significant. In other words, only if the critical ratio is above 2.00 can a counselor safely say that the difference between the means of two sample groups represents a true difference between the means of the two populations from which the samples were drawn. If the critical ratio is 1.99 or below, the chances are relatively great that the obtained difference was caused by random factors or chance factors.

A critical ratio of 2.00 indicates that there are about five chances in 100 that chance factors produced such a difference between sample means in the absence of a real difference between the population means. A critical ratio of 3.00 indicates that there are about three chances in 1000 that chance factors produced the difference between the obtained means.

In the foregoing example, a test, of course, was used to study the difference between groups. It was necessary to assume that the test was a good one for the purpose at hand.

Test constructors may employ a similar technique to establish the significance of a difference between two groups. In validating a personality test, for instance, they identify two or more groups which are judged by teachers to be different—for instance, a socially-adjusted group and a socially-maladjusted group. After the personality test has been given to both groups, the mean scores therefrom are compared. In an item analysis of the test, those items which show a significant difference between the two groups are retained; those which do not are discarded. In this manner, the test is made so that it discriminates between the socially-adjusted group and the socially-maladjusted group. An important criterion of the validity of the test is whether the difference between the mean score of the former group and that of the latter group is statistically significant.

SUMMARY

The present chapter has pointed out the value to the counselor of the coefficient of correlation and the critical ratio. For further information with reference to the computation and interpretation of these statistical measures, the reader should refer to a textbook in this field. These textbooks will help the reader to develop the "statistical literacy" which is essential to the understanding of test manuals, articles in professional journals, and other reports of research. Such literacy is obviously requisite to the acquisition of professional competence in counseling.

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The Nature of Observations

WHAT can you tell about a student by looking at him? Can you determine whether or not he is honest? Intelligent? Conscientious? Some persons claim they can make accurate judgments about people simply by looking at them. They say, "Mr. Smith looks so pleasant," or perhaps, "Mr. Smith doesn't look very bright, does he?"

OBSERVATIONS MAY BE SUPERFICIAL AND MISLEADING

In our culture, people often make superficial assumptions about the relationship between physical appearance and personality traits. A high forehead, some believe, is an indication of high intelligence. Fat persons are presumed to be jolly. The falseness of assumptions like these was pointed out many years ago by Donald G. Paterson, a University of Minnesota psychologist, in his book, *Physique and Intellect*. After reviewing many scientific studies, Paterson concluded that a person's physical appearance gave few if any reliable clues to his personality.

But can't teachers tell something about a student by looking at him? Certainly they can, if they know what to look for and how to look for it. Sherlock Holmes, as the reader will recall, made good use of observation in carrying on his work as a detective. Holmes did not look for generalized personality traits; rather, he observed specific aspects of the person under study. For example, he observed that one of his fellow characters in fiction had a peculiar set of calluses on his hands. He related this observation to the kind of work that would cause the calluses; finally he determined that they were characteristic of those possessed by cobblers. Nevertheless, although physical characteristics can at times give some information

about an individual, they do not provide a basis for generalizing about that individual's personality, mental ability, or other less tangible attributes.

Fortunetellers often mystify their clients by using a fact obtained by accurate observation as the starting point for predicting their future. For example, it is not uncommon for a married woman to remove her wedding ring before going to a palmist. Yet the palmist notes the mark still on the woman's ring finger. Then, by telling the woman that she is married, the palmist gives her the impression that he can read the past and present from the wrinkles in her hand. The gullible client is then receptive to whatever the palmist says is ahead for her. Later she tells her friends what a wonderful "reading" she had—"Why, he even told me I was married, and I had taken my ring off before I went to see him!"

Such tricks as this and such stories as those appearing in murder mysteries tend to lead the general public to place too much faith in observation as a means of determining human traits. In contrast, scientific studies have had a distinctly opposite effect on psychologists. Generally, they are extremely cautious in the uses they make of observational methods.

Between blind faith in observation and complete skepticism of its worth, there is a sensible middle ground. It is on such ground that this chapter considers *observation* as one of the techniques that is highly useful in analyzing the individual student. This chapter is primarily concerned with the techniques of making observations; the next chapter discusses methods of recording observations.

WHAT SHOULD THE STAFF OBSERVE ABOUT STUDENTS?

Instead of attempting to relate a specific physical attribute to a generalized personality trait, guidance workers should observe the individual as a whole in a specific situation. They, for instance, should never conclude that a person has low intelligence because he has a low forehead. Rather, they should observe the reactions of that individual when he is faced with a problem which requires him to use his abilities to solve it.

In essence, they observe the student in action; this is the basis of useful observations.

Each student should be observed in a variety of situations, because his behavior is not always the same in every situation. John may be a lion on the playground but a lamb in the classroom. Mary may appear indifferent when she fails a school course, but may be deeply upset when she fails to get a date for the junior prom or a leading part in the class play.

In addition to observing a student in a variety of situations, teachers and counselors should observe different aspects of the adjustment of that young person. Unfortunately, many of the observations which teachers make are concerned only with the student's educational adjustment *in class*. For example, if a student is observed to be doing well in school, he is considered a "good boy," regardless of his adjustments elsewhere.

It is both traditional and natural for teachers to concentrate their observations first in the area of educational behavior. Because schools have a long history of emphasizing subject-matter achievement, it is understandable that many teachers still make relatively few observations concerning the student's social adjustment, his emotional status, his physical health, or his non-academic interests. But in recent years teachers have been giving much more attention to the total and varied adjustments of each student. Many schools have, in fact, acknowledged their responsibility for "life adjustment education," rather than for subject-matter preparation only. If teachers are to discharge the responsibilities which the schools have accepted, they must observe their students' adjustments not only in the educational area but in other important areas as well.

If you as a teacher believe that a student's adjustments should be observed in a wide variety of activities and from educational, social, emotional, and physical angles, then you must answer the question: Specifically, what types of behavior should I observe?

Picture yourself at the front of your classroom at the beginning of the hour. Seated before you are 35 high-school students. Among these, which stand out? More than likely you notice John, who is talking loudly to his neighbor, or Jack and Jim, who are engaged in a friendly scuffle in the back of the

room. After the opening bell rings, you notice Mary because she fails to go to her seat promptly; or you notice Art because he is breaking your rule that pencils must be sharpened before and not after the opening bell rings. In paying attention to these boys and girls, you, like many other teachers, are tending to observe the troublesome students—those whose behavior is especially annoying to you.

At the same time, you neglect other students who warrant your observation as much as the annoying ones. You ignore the shy little girl who comes in and takes her seat quietly without speaking to a soul; yet she is behaving in a way that deserves your careful observation. Or, you ignore the student who surreptitiously gets the answers to the problems from a fellow student just before the closing bell rings; he warrants your attention as much as do the scuffling boys.

Unfortunately, teachers at times tend to reward behavior which is just as symptomatic of unhealthy adjustment as is the behavior they frown upon. Some teachers, for example, place a premium on docility; as a result, the quiet student who obeys their every suggestion may go unhelped in making a good adjustment to life in school and elsewhere. A boy who has withdrawing tendencies is overlooked because these tendencies are in line with the teacher's desire for an orderly and quiet classroom. As these examples imply, teachers should observe all students, not just those whose behavior demands attention.¹

In observing students, the teacher should emphasize their strong points. Observation of the good qualities of a student enables teachers and counselors to be more helpful than does observation of his bad qualities. If teachers have the policy of looking for and accentuating the positive in their students, it enables them to make maximum use of these strengths in helping students to develop to the best of their ability.

Looking for the good in a person does not mean taking a Pollyanna attitude toward him. It is, of course, important to recognize a person's weaknesses. But since a person's weak-

¹This point has been discussed in considerable detail in *Children's Behavior and Teachers' Attitudes*. A summary of this pioneer study has been prepared under the title, *Teachers and Behavior Problems*. Copies are available from the Commonwealth Fund, 41 East 57th Street, New York 22, N.Y.

nesses frequently stand out more clearly than his strengths, observers must constantly be on the alert to look for strengths. Take Lon, for instance; he is often impertinent and impolite in the classroom. His teachers must avoid the natural tendency, on the one hand, to observe this boy only when he is "bad," and on the other hand, to ignore him when he is "good." They must observe Lon when he makes a good report in class, conducts himself properly and politely at the school dance, and "plays fair" on the athletic field. If teachers and counselors observe the adjustments of Lon or any other student in a variety of situations and from several angles, they cannot help but observe many good qualities.

In their conscious efforts to observe a student's behavior, teachers and counselors should attempt to see him in situations in which his actions are significant. They should avoid attaching importance to behavior which is in reality insignificant. One of the authors once read the final observations which an elementary teacher made at the end of the year for the pupils in her grade. For one pupil her entire observation read: "John did not drink milk this year." This observation had limited meaning to his future teachers. But more tragic was the fact that this observation was apparently the most significant thing the teacher had noted about a pupil whom she had had in her class for a whole year.

It is difficult, perhaps impossible, to set up hard-and-fast rules for determining what is a significant observation. The following examples, however, will indicate the extremes of a scale which ranges from the most significant to the least significant observation.

Miss Smith noticed that the first time Bill voluntarily contributed to the class discussion was when he told about the guns which were used during the Civil War. The next day he brought his great grandfather's gun to show the class. The class was greatly interested in the gun and in what Bill told about it. Miss Smith significantly observed that Bill took an active part in the class discussion from then on.

Mr. Hokanson observed that Ida always sat in the back of the room. He also noticed that she refused to make reports in front of the class. He wondered if her early physical maturation

was associated with her behavior. On the way out of class one day he noted that she walked very stoop-shouldered, in an apparent effort to conceal her physical maturity and size. His observations were beginning to fit together as an explanation of the girl's behavior.

In contrast with these significant observations are those made by Miss Nepper. She reported to the principal that she observed that John did not have his pencil for the second day in a row. She also pointed out that this was in strict violation of her rule that each pupil must bring a pencil to class every day. She observed that Edna had a pretty yellow dress on today, and she wondered if the girl's mother had made it for her. Such observations have little value in gaining an understanding of the individual. Significant observations, however, are ones which enable teachers and counselors to understand more clearly a student's behavior.

WHAT KINDS OF OBSERVATION ARE THERE?

Observations can be classified in a variety of ways. One such classification is two-fold—observations which are not recorded and those which are recorded. Most of the observations which teachers and counselors make are not recorded. They are made "on the spot," and are interpreted and acted on, all within a few seconds. The teacher *observes* that Gerald is looking out the window during a class discussion. She *interprets* his action as indicating that he is not paying attention. She *acts on* this interpretation by asking him a question immediately.

Certainly one of the elements in good teaching is the ability to make, interpret, and act upon such unrecorded observations. But a school must have more than these unrecorded observations to work intelligently with its students. To gain a developmental picture of Tom, Dick, or Harry, the counselor must have at hand a number of recorded observations to which he can refer from time to time in order to understand that student. In other words, only if observations are recorded can they be reviewed by teachers, counselors, and others in their efforts to analyze the student's behavior.

Another system for classification of kinds of observations is in terms of the situations in which students are observed.

For example, one can speak of classroom observations, playground observations, observations made during the interview, observations made during a testing situation, or observations in out-of-school situations. Such a classification calls attention again to the need for observing student behavior in a wide variety of situations. But it does more than this. It re-emphasizes the point that a person may act differently in different settings. The student who is a timid soul in the classroom may be a bully on the playground. Or the student who appears happy on the athletic field may sulk in the classroom. Said another way, to understand a student, the teacher must observe him in enough different situations to get a picture of the pattern of his behavior.

It is this need to discover a *pattern* of behavior which has given rise to the use of controlled observational techniques. Ordinarily in the typical classroom or on the playground, students are observed in whatever situation they happen to be found. In other words, little if any use is made of controlled observational techniques. True, in giving an individual intelligence test such as the Stanford-Binet or the Wechsler-Bellevue to a student, the examiner does, in fact, observe that student's behavior in a controlled situation. Although psychologists have developed many other excellent controlled observational techniques, schools as yet have done relatively little toward taking advantage of them.

An outstanding example of the use of controlled observation was the selection of candidates by the Office of Strategic Services, during World War II.² O.S.S., it will be recalled, was the governmental agency which was in part concerned with the conduct of espionage activities abroad. Therefore, the members of the O.S.S. had to be carefully selected in terms of their ability to work under pressure and often under dangerous circumstances. Here is a brief description of how these staff members were chosen.

At one time during the war, the candidates for one O.S.S. school reported at an office in Washington, D.C. Here they were told that they would be taken to a country estate, where

²The O.S.S. Assessment Staff, *Assessment of Men* (New York: Rinehart and Company, Inc., 1948), chaps. III and IV.

they were to reveal their true identity to no one. They were to assume fictitious names and were to devise and use fictitious stories which "explained" their past lives. After the candidates were dressed in Army fatigue clothing, they were transported by truck to the country estate. There they were under the almost constant observation of a staff of psychologists.

During the three days of their stay, the candidates were put through a number of carefully planned situations and their behavior was carefully observed. For example, each candidate was told that he had been caught going through secret files in a government building at midnight. He was then given ten minutes to think up a story that would explain his presence in the building. He was next brought into a room where he was seated with a bright light shining steadily and directly in his face. There the candidate told his story to a staff officer who questioned him skillfully and sharply, in an effort to discredit that story.

Regardless of what the candidate's story was or how well he supported it, he was told by the staff interrogator that he had failed the test and that he could return to his own room. When the candidate arrived at his room, he found another staff officer. This officer was a very sympathetic person, who in a friendly manner inquired about his reaction to the failure. In reality this friendly person was a skilled observer; he was carefully watching and listening to the candidate's reactions to his failure and to his other experiences at the "school." These reactions, the staff believed, might have significance in predicting the candidate's success as an O.S.S. agent.

In another test situation, three of the candidates were taken to the edge of a small creek. They were directed to build a bridge out of whatever they could find in the immediate vicinity. While constructing the bridge, they were carefully observed to see which of the three assumed leadership of the group, what contributions each made to the total group project, how well each co-operated, and so forth.

In still another situation, the candidate was told to direct two helpers in the assembly of a simple frame structure for which tinker-toy-like wooden poles and other parts were at

hand. The two helpers provided were allegedly handymen who worked around the estate. In reality they were trained persons who did everything within their power to be unco-operative with the candidate. During the project the handymen and the observers carefully studied the candidate's reactions to his unco-operative helpers and to his own frustrated efforts to get the structure completed in the allotted time.

At the end of the three-day testing period, members of the school's staff came together and pooled their observations. Through this pooling they made the best possible judgments about the probable success of the candidates in O.S.S. jobs. Because staff members had observed each candidate in action in the same controlled situations and because their observations were carefully controlled, the staff was able to make relatively sound comparisons between the different candidates.

In schools it is unnecessary to go this far in setting up perfectly controlled situations in which to observe students. Many school situations, of course, are controlled, at least in part. Therefore, a classroom situation can have many elements which are common to the situations set up by the O.S.S. The chief difference between the two types of situations is the skill of the observer. If teachers and counselors acquired observational skills equal to those developed by the O.S.S. observers, their observations could be equally penetrating and revealing.

HOW OFTEN SHOULD STUDENTS BE OBSERVED?

In some schools it has been extremely difficult to get teachers to agree on the answer to the question, "How often should students be observed?" A trained counselor is interested in having a student observed as often as possible. He is well aware of the need for observing that student in a variety of situations. He also realizes that he cannot safely judge that student's basic behavior pattern from a single observation. In essence, this counselor believes that the larger the number and variety of observations and the more systematically they are made, the better basis they furnish for analyzing the individual.

If this belief were carried to the ridiculous extreme, a trained person would have to observe a student 24 hours a day.

This is obviously impracticable. Therefore, there must be a reasonable middle ground between such an extreme and that of no observation whatever. Hence, the question, "How often should a student be observed?" must be answered in terms of what is possible and what is desirable.

From the teacher's point of view, observation is a time-consuming process. Consequently, there may be a few teachers who observe their students only if they are forced to do so. They may observe, mainly if not solely, because they are required to record an observation about each student at the end of every semester. Other teachers observe students only when these students become nuisances in class.

The vast majority of teachers, fortunately, recognize the need for carefully observing student behavior and making a record of it. They are aware that if all teachers made such observations and recorded them, the combined observations about a single student would help all teachers to understand that student better. Moreover, the teachers who are really interested in their students devise means for regular observations. Some of these teachers decide that on a given day they will observe one or two particular students during a class period. The next day they select one or two other students for observation. They do the same thing, day after day, around the class. Thus, during a semester they have carefully observed each student on several occasions. In this manner they avoid the danger of observing only the loud, the annoying, the troublesome students. In this manner, also, they make sure that their observations do not make undue inroads upon their limited time.

Other teachers prefer to plan their observations in terms of a given period of time, rather than of observing particular students at particular times. An English teacher, for example, may have a free-reading period once a week. During this period he observes his students and notes those instances of behavior that seem to be particularly significant. In this plan, the teacher avoids the danger of observing a particular student on a day when that student's behavior is not particularly illuminating. In such a plan, also, the teacher looks for significant behavior on the part of any one or of all of his pupils.

OBSERVATIONS SHOULD FOLLOW CERTAIN PRINCIPLES

Both of these observational plans tend to provide the teacher with snapshots of student behavior. This snapshot-type of observation has many weaknesses, as scientific studies have shown. In her book, *The Role Of The Teacher In Personnel Work*,³ Strang points out that, to get the most reliable picture of a student's behavior, observation should be made in accord with the following four principles:

1. *Observe the whole situation.* It is not enough to observe only John without observing the situation in which John is acting. If John is a non-participant in class, note whether the class activities are such that he could be participating. If John is on the playground, note whether he is with a group of students with whom he has never associated before, or whether he is with his old neighborhood gang. Observe the setting or the environment in which John is behaving, for this has a great influence on the way he behaves.

2. *Select one student to observe at a time.* If a teacher tries to observe a number of students at once, he will almost inevitably focus his attention upon the obvious behavior of some students, thus neglecting the subtle behavior of other students. By concentrating on one student for a period of time, however, the teacher has the opportunity to study that student's behavior thoroughly.

3. *Observe students in their regular activities such as those in the classroom, on the playground, or in passing from class to class.* The way students behave in their so-called normal activities is usually more significant than the way they behave in atypical situations. Here is an example that clarifies this point. In Mary's normal activities in the classroom and on the playground, she was observed on many occasions to have made gestures of friendliness to the other girls. When Mary and several of her friends tried out for the class play, however, she was obviously tense and excited. She sat alone while waiting for her opportunity to read the part she wanted. When one of the girls approached her, Mary said, "Don't bother me now. I'm

³Ruth Strang, *The Role Of The Teacher In Personnel Work* (New York: Columbia University Bureau of Publications, 1946), chap. VIII.

busy." Had a teacher observed Mary only in this situation, the teacher might have concluded that the girl was a somewhat unfriendly person. But in view of the prior observations of Mary's friendliness, the teacher might rightly conclude that Mary's behavior during the play tryout was largely explained in terms of that particular environmental setting. There Mary was *anxious* to get the part, and her anxiety caused her to act in a manner which *appeared* to be unfriendly. Exactly opposite was her ordinary way of behaving.

4. *Make observations over a period of days.* Now and then most persons have a day which they call "Blue Monday." When a person flares up unexpectedly his friends may say that he "got out of bed on the wrong side this morning." Such an individual may seem to vary widely in his behavior from day to day, but underneath this daily variation he has a fundamental or prevailing pattern of behavior. In guidance work, the counselor is interested mainly in determining the individual's *basic* behavior pattern. He is much less concerned with daily fluctuations in that individual's behavior.

WHAT ARE THE LIMITATIONS OF OBSERVATIONS?

In analyzing an individual student, all techniques, including observation, have limitations. But this fact should not discourage the teacher or counselor. If he realizes the limitations of the techniques used, he is less likely to make observations that will be misinterpreted by others. As he gets and uses observational data about a student he should keep in mind the following limitations:

1. *The observer may get only a small sample of student behavior.* It is obviously impossible to observe everything that a student does or says. Complete observation would yield such a mass of detail that teachers and counselors would be unable, within a reasonable time, to sort out the significant aspects of the student's behavior. For this reason the teacher who makes an observation must be relied upon to make the preliminary judgment of what is significant and what is not. The unreliability of one teacher's observation can be partially overcome by collecting observations from several teachers and by having these observations made with Strang's suggestions in mind.

2. *The observer may be biased.* Every teacher has had in his class certain students who, because of appearance or mannerisms, are more appealing than others. In observing these favorite students, a teacher tends to observe the good qualities and to overlook the bad. His ratings are affected by the tendency which psychologists call the "halo effect." Such a tendency also influences a teacher's ratings of students whom he dislikes. In observing students who have certain disagreeable characteristics, the teacher is likely to observe bad traits to the exclusion of good ones.

Closely related to this tendency to make observations which are in harmony with a generalized opinion concerning the student is the tendency to make observations which are consonant with the observer's biases. If the observer believes that fat people are jolly, then he is likely to observe that the fat boy in his class is jolly. In addition, such an observer tends to select incidents which are in harmony with his biases.

That this is true has been observed by social psychologists in their study of the problems of minority groups. Certain prejudiced persons in the majority group have built up in their own minds a preconceived picture of what all members of the minority group are like. As the prejudiced majority comes in contact with members of the minority group, it tends to look for behavior in line with its prejudice. On the basis of limited contacts with only a few of the minority group, the entire minority group may be condemned.

Teachers and counselors who make use of observation must guard against these halo effects and biases. In interpreting observations made by others, they must weigh carefully the influence these factors may have had. Bias in observation is difficult to identify, let alone counteract. Training of observers will help somewhat to reduce the influence of their biases. The effect of biases can be controlled to an even greater extent by deleting all subjective or evaluative words and phrases from the records of observations. This important point is discussed in greater detail in the next chapter, on recording observations.

3. *The observer may be inaccurate.* In legal records the inaccuracy of witnesses is notorious. Every schoolboy knows the story of the trial in which Abraham Lincoln confronted one of

the witnesses with an almanac to prove that there was not a full moon on the night that the witness declared he had observed the crime by moonlight. A common experiment in general psychology is for the instructor to stage an incident in the classroom and to ask each student to write down exactly what happened. Invariably there are wide variations among the students' reports of the incident.

Observations which teachers and counselors make of students may contain certain errors; these errors are not intentional. To eliminate such inaccuracies any observation which is not in harmony with the general pattern of observations of a particular student must be carefully investigated. For example, a counselor may have a report from one teacher that "John appears to be girl-crazy because he is always talking with Mary Smith." After getting such a report, the counselor may find that it is out of line with every other observation recorded about John. He may discover that the truth of the matter is that John is getting answers to homework problems from Mary. In this case, the teacher's observation that John was seen talking to Mary on frequent occasions is correct, but his interpretation based on such incidents is decidedly inaccurate.

At times any teacher or counselor may be inaccurate in his observations, yet he can improve his accuracy, at least in part, through adequate training. This training can help him to avoid drawing conclusions which are not supported by the facts of the incident observed.

4. *The observer may find it difficult to communicate his observation to another person.* Any incident occurs in a setting. When a student is observed, he should, as Strang points out, be observed in his setting. But it is difficult for a teacher or a counselor to include an adequate description of the setting when reporting an observation about a student. To illustrate, Miss Hanson may observe that during the class period John was more restless than usual and continued to stare out the window. To give a proper setting for this observation, the teacher would have to describe what events led up to this particular incident, what occurred during the class period, and what the other significant details were.

It is only rarely that an observer can describe to another

person the complete setting in which a given incident took place. Nevertheless, the observational technique has increased usefulness if the observation of an incident is reported with a description of the setting. This means that if Miss Hanson's observation is to be meaningful to another person, she should report not only that John was restless but also the setting in which his restlessness occurred. To do this she might write: "In our class today, we were discussing the Battle of Hastings. John had written an extensive paper as an outside project, and his paper went into considerably more detail than did our class discussion of the battle. He appeared to be restless and looked out the window several times while the class was discussing the topic on which he had written his paper." Such a report gives some indication of the events leading up to the situation which attracted Miss Hanson's attention. This report also enables another person to interpret John's action more nearly in its true light.

Although it is practically impossible to report completely an observation of an incident to others, trained observers can identify and record significant bits of information which help others to make an accurate interpretation of the incident.

WHAT ARE THE VALUES OF OBSERVATIONAL TECHNIQUES?

Because of the limitations of observational techniques just cited, many guidance workers avoid using observational methods. Instead, they rely almost exclusively on psychological tests or inventories and other formalized techniques for gathering information about student behavior. This is unfortunate. At times, these formalized techniques may be more appropriate than observations; at other times, however, observation is more valuable than other techniques. Despite the limitations of observational techniques, all guidance workers should be skilled in their use. Their particular values are listed here:

1. *Observational techniques supply information which supplements that obtained by other methods.* A counselor may have a mechanical aptitude test score made by a tenth-grade boy. This score in itself gives some indication of the boy's potentiality for success in mechanical work. However, the score

alone is an inadequate basis for estimating the boy's probable success on the job. Its value can be enhanced by observational techniques which provide supplementary information.

This additional information can be gained by observing the boy in a shop class. There, is he doing good work? Does he appear to enjoy the work? Added information can also be obtained by observing the boy when he is not in school. What kinds of activities does he engage in voluntarily? Are they related to his mechanical aptitude? Furthermore, the observer may note that boy's reactions to a suggestion that he participate in extracurricular activities along mechanical lines. His behavior while engaging in these activities may also be observed. Other examples could be cited to make the point that varied observational techniques can provide highly valuable supplementary information about a student.

2. *Observation gathers information which cannot be gathered by other available techniques.* Even in the best of case studies, as suggested earlier, the guidance worker must be content with something less than complete information. He may be willing and able to expend the time and effort required to gather as much information as possible, but still he finds that the currently available techniques do not provide information in all the key areas of a student's life. A psychological test, for example, is not a good indicator of a student's reaction to success in the classroom or failure on the athletic field. An interview is not likely to indicate how the student reacts when he is with a group.

In these instances, observational techniques must be used to supply the missing information. A teacher can observe the student's reaction to success or failure in the classroom; he can observe that student's behavior in a group of his peers. Thus, observational techniques can provide important information which cannot be collected in other ways—one of the strongest arguments for their use by all guidance workers.

3. *Observations sample students' real behavior.* In analyzing individuals, observational techniques have an advantage over certain other techniques. In a paper-and-pencil test of personality, for example, a student is frequently asked to indicate how he behaves under a certain condition. If he has not

experienced the condition, he is asked to indicate how he might behave. The kind of response which the student thus makes is in large measure determined by his view of the test. If he takes a dim view of the test and its results, his reporting may be quite inaccurate.

Direct observation, however, does not require a student to report or comment on his own behavior. Therefore, it can in some instances furnish more nearly accurate information than can be obtained from what the student himself writes or says. If the student is unaware that he is being observed, he is likely to behave in a manner typical of him. He is not constrained by the formal and sometimes restricting atmosphere of the testing room. He is not on his "good behavior" as he is in the classroom. He is not consciously trying to "put his best foot forward," as he so often does in the counselor's office. Thus, observations are of value because they tend to give a sample of the student's behavior in a "real life" situation.

4. *Observations are selective.* In the discussion of limitations it was pointed out that observations are greatly affected by the person who is doing the observing. Because the observer cannot report every action of a student, this observer must *select* those incidents which he believes to be important. In other words, an observer may observe many activities of a particular student. If the observer is skilled, he will select and report those activities which are truly significant. Such observations, which have been carefully selected and reported, can be of inestimable value to the person who is counseling with a student. They enable the counselor to discover rapidly the kinds of behavior which others who have observed the student consider most important.

5. *Observation promotes the growth of persons doing the observing.* Daniel Prescott, in his work in the child-study field, has demonstrated the values which accrue to a person making observations. In the book, *Helping Teachers Understand Children*,⁴ Prescott describes and discusses observational techniques in considerable detail. By having teachers observe stu-

⁴Staff of the Division on Child Development and Teacher Personnel, *Helping Teachers Understand Children* (Washington, D.C.: American Council on Education, 1945), pp. 21-41.

dents and by having teachers discuss their observations with other teachers as well as with skilled psychologists, Prescott found that teachers not only improve their skill in observing but also improve their ability to understand students.

In accord with Prescott's findings, a careful observer continually asks himself, "Why does this student behave as he does?" In attempting to answer this question, the observer gains a better understanding of the student and his behavior. Even if there were no other reason for observing students, the benefits in personal growth on the part of the observer would justify the use of observational techniques.

SUMMARY

In this chapter, the methods, limitations, and values of observations have been presented. In many schools, plans are made to facilitate the recording of observations. All of the recording has a single purpose—that of making the observation available to others who may be teaching or counseling with the student. In the following chapter, the methods which teachers and counselors can use to record their observations will be considered.

SUGGESTED READINGS

(See also list at end of Chapter 5)

- Cronbach, L. J. *Essentials of Psychological Testing*. New York: Harper and Brothers, 1949. Chapters 18 and 19.
- Staff of the Division on Child Development and Teacher Personnel. *Helping Teachers Understand Children*. Washington, D.C.: American Council on Education, 1945. Chapter 2.
- Strang, Ruth. *Counseling Technics in College and Secondary School*. New York: Harper and Brothers, Rev. 1949. Chapter 2.
- Wilson, F. M. *Procedures in Evaluating a Guidance Program*. New York: Bureau of Publications, Teachers College, Columbia University, 1945. Chapter 5.

Recording Observations

OBSERVATION, as the previous chapter suggested, is one of the best techniques whereby the teacher or counselor can analyze the individual student. Typically the teacher employs observation in his varied contacts with students. Because he is more than busy with other necessary work, he may feel that he does not have the time or energy to record his observations. Yet such records are essential if he is to do the best job possible in helping each student, as the reasons given next point out.

WHY SHOULD THE STAFF RECORD ITS OBSERVATIONS?

Good teachers are continually observing their students and doing much to correct the deficiencies which they observe. Many of these teachers unfortunately do not make records of their observations. Therefore, they find it difficult if not impossible to trace a student's progress in developing his strengths and in overcoming his weaknesses. The absence of developmental records is especially serious in the cases of "problem" students. During a single school year, for instance, some students become noticeably less effective group members. Others assume unwholesome attitudes. Still others appear to make little or no progress in their developmental task of achieving maturity. This suggests a number of specific reasons why observations not only should be made but also should be written.

1. *Written observations promote balanced judgments.* Observations should be recorded because they help the observer to keep a balance in his judgment of each student. It is human nature to remember the most recent or most vivid incident.

John, for example, irritates his teacher by coming to class

for several days in a row without his lessons prepared. When asked about John's schoolwork, the teacher will likely reply, "He is not a good student." In making this statement the teacher recalls the events of the past few days but forgets that for weeks on end John had been doing average work in class.

If the teacher could refer to a running record of his observations about John's classwork, he undoubtedly would see the recency of the boy's failure to prepare his lessons on time. Had this teacher kept a record of his observations over a number of weeks, he might rightly say: "John usually does average work, but he has slumped badly the past several days." Thus, his written record would help him to take a more balanced view of John and of his progress in school.

2. *Written observations save staff time.* Consider, for example, the problem of the homeroom teacher in School A who wishes to know what observations of a particular student other teachers have made. If this homeroom teacher were to ask each of the student's present and former teachers about the boy, he and those with whom he conferred would obviously have to spend a considerable amount of time. Perhaps he cannot talk with some of the student's former teachers because they have left the local school system. To get in touch with these teachers, he will have to spend additional time in writing letters to them.

In contrast, consider the situation of the homeroom teacher in School B. For the student under consideration, he has a cumulative record; it contains a number of reports of incidents observed by that student's previous and present teachers. This homeroom teacher, therefore, does not need to scurry about the school building to locate teachers, to waste his precious time and that of another teacher in discussing the student, or to write letters. Instead, he can devote his limited time to interpreting already-recorded incidents and to judging their significance in terms of the student's present adjustment and problems.

In School A, furthermore, the homeroom teacher has an added difficulty. Even if he were successful in contacting all of the student's former teachers, he would probably obtain from them certain reports whose accuracy would be open to question. This is true because the longer the delay in recording an obser-

vation of an incident, the greater the likelihood of inaccurate reporting. Observations should be recorded before the errors of memory become a factor in reducing their accuracy.

Observations recorded soon after the incidents occur help assure that these records are as accurate and complete as possible. Practical considerations prevent teachers from immediately recording the incidents they observe. If a teacher is responsible for a class of 30 to 40 students, it is not likely that he will have time during the class period to record even one significant incident. He, therefore, must remember the important incidents he has observed until he has a free period, or until the end of the school day.

Nevertheless, the teacher will find it helpful to keep a small scratch pad handy so that he can jot down a note or two which will help him to recall an incident. For example, during class a teacher may make the following notation: "John—headache—recite—get someone." Later in the day this will call to mind the incident which the teacher then records as follows: "John was scheduled to make an oral report in class today. At the beginning of the period he told me that he had a headache. Just before it was time for his report, he came to me in the back of the room and said, 'Here's my report. It's all written out but my head aches so bad I can't read it. Will you get someone to read it for me?' This is the second time this semester that John has asked to be excused from making an oral report." Thus, a notation made at the time of an incident is a valuable aid in recalling and recording that incident accurately.

3. *Written observations can reveal developmental patterns of behavior.* Another main reason for recording observations of incidents soon after they happen is that such records help give an accurate developmental picture of a student. If observations are made over a period of time, they can serve as a record of that student's growth.

To illustrate, Olga behaves in a manner which her teacher, Mr. Shelly, believes is indicative of a lack of ability to participate effectively in groups made up of her fellow students; he makes a record of this observation. Thereafter Mr. Shelly provides many opportunities for Olga to work with such groups. At the close of the school year he observes several occasions

when Olga was able to fit herself into the group very well. Because Mr. Shelly has recorded his observations of Olga throughout the year, these observations reflect her gradual development of the ability to work effectively with others. This knowledge is valuable not only to her teacher but also to her counselor.

Suppose, however, that Mr. Shelley has made no records of his observations of Olga's social development. Then it is quite likely that, when asked about Olga's level of group participation, he will be able to report only her present status. Lacking knowledge of Olga's growth, both her teacher and counselor will be less effective.

Furthermore, if teachers record their observations of "problem" or other students long after the incidents occurred, such observations are unlikely to reflect or reveal student patterns of development. For this reason, teachers should be encouraged to record significant incidents at the time they occur. If teachers do so, they not only will lessen the danger of inaccurate recording, but also will facilitate the identification of students' developmental patterns of behavior.

4. *Written observations can be pooled.* One should not overlook the values that are to be gained by pooling observations. In Chapter 4, it was pointed out that students should be observed in a variety of situations. But many teachers do not come in contact with their students in a variety of situations. Ordinarily they observe a student in only one or two classes and must depend upon others to observe him in different situations. If a student's teachers pool their observations of him, they provide a record which will reflect his behavior in a variety of situations. A person who refers to this pooled record will be better able to understand the student than if he depends solely upon his own observations.

In summary, there are four principal reasons for recording observations of student behavior. First, recorded observations enable the observer to keep a balance in his judgment of each student. Second, these observations save staff time. Third, they can be analyzed for developmental patterns of behavior. And fourth, they can be pooled, thus forming a sound basis for analyzing the student.

WHAT ARE THE METHODS OF RECORDING
OBSERVATIONS?

There are basically only two methods of recording observations—*observer description* and *observer evaluation*. Each method has many variations. So many of these variations have been named and described by their enthusiastic supporters that the casual reader may wrongly assume that there is little agreement concerning the basic methods of recording observations.

In the *observer-description* method, the observer simply describes what he has seen. He makes no attempt to evaluate or interpret his observation. In the *observer-evaluation* method, he evaluates and otherwise interprets his observation. In its purest form, the evaluation method does not allow the observer to include any descriptive material in his record of observations. In common practice, however, observers often combine elements of both methods in the procedures they use in recording their observations.

WHAT IS THE OBSERVER-DESCRIPTION METHOD?

The *observer-description* method is illustrated by two sample reports, as follows:

1. At recess today Robert said: "Let's play pig ball. John, you choose for one team, and I'll choose for my team." One of the boys asked Robert: "How come you always get to choose?" He replied: "'Cause I thought of the game."

2. Emma was absent yesterday. When she came to class today, I asked her if she was ready to read her theme, which she was scheduled to read yesterday. She began crying and said: "Oh, Miss Jones, I can't read my theme to the whole class." I asked her to give me the theme. She said: "I left it in my locker."

Both of these reports have one characteristic in common—that of objectivity. In each report the writer has given only the facts as he observed them. He has carefully avoided any words or phrases which indicate his feelings or opinions regarding the student or the incident in which that student was involved. As a result, the reader must make his own interpretation or evaluation of the incident. Such a report is in accordance with the idea that observations should be reported as objectively as possible.

There is evidence that if objective or factual reports are used as a basis for interpretations, these interpretations are likely to be more accurate than if they are based on a mixture of fact and interpretation. Interpretations of interpretations are likely to be less accurate than interpretations of facts.

WHAT IS THE ANECDOTAL RECORD?

The observer-description type of report is most commonly referred to as an *anecdotal record*. Such a record has this obvious advantage over other types of recording methods: it does not require an elaborate report form. Although the teacher can make an anecdotal record on a blank sheet of paper, most schools supply teachers with anecdotal record forms similar to that shown in Figure 10. Such a form has merit mainly because it helps guarantee that certain identifying information is included in each recorded anecdote.

FIGURE 10
SAMPLE OF AN ANECDOTAL RECORD FORM

Student's Name_____	Date_____
Observer's Name_____	
Place Observed_____	
The Incident:	
Comments:	

The size of paper on which the anecdotal form is printed may vary from school to school. Some schools prefer to use regular size sheets, 8½ x 11 inches, because these sheets can be conveniently filed in the students' cumulative record folders.

Other schools prefer 3 x 5- or 4 x 6-inch cards because these cards can be easily carried around or kept in a card file.

The objective anecdote is more difficult to write than is commonly believed. Many words in the English language have not only in their primary meanings but also their qualitative overtones. "He *slammed* the door," for example, means that the door was *shut violently*. When the word, "slammed," is used to describe the way a student closed the door, the reader usually infers that this student was angry, which may or may not have been the case. If the teacher avoids such graphic words as "slammed," however, he writes anecdotes which are usually "dry as dust" descriptions. Such anecdotes lack the feelings which are so characteristic of human behavior. As a consequence, many teachers and counselors have become dissatisfied with the objective anecdote. This dissatisfaction, combined with the difficulty of writing with complete objectivity, has led to the modification of the anecdotal method which is described next.

The Modified Anecdotal Record

The modified anecdotal method divides the report into two sections: (1) the observer's record of the incident itself, and (2) the observer's comments thereon. The first section of the report contains an objective description of the incident, while the second section allows the observer to make any comments he wishes. This method has all of the advantages of the objective description method, plus a number of other advantages. It permits the observer to make comments, but it separates fact from opinion. Thus, the method also helps to safeguard the student from the possible harm resulting from a prejudiced report.

Examples of the Modified Anecdotal Method

To illustrate the modified anecdotal method, the anecdotes just cited are reproduced next with the addition of the observer's comments.

Incident: At recess today Robert said: "Let's play pig ball. John, you choose for one team, and I'll choose for my team." One of the

boys asked Robert: "How come you always get to choose?" He replied: "'Cause I thought of the game."

Comments: Robert typically takes over the leadership in a very domineering manner. I believe that the other children resent his dominance, but because he is always ready with a proposal, they don't know how to handle him.

Incident: Emma was absent yesterday. When she came to class today, I asked her if she was ready to read her theme, which she was scheduled to read yesterday. She began crying and said: "Oh, Miss Jones, I can't read my theme to the whole class." I asked her to give me the theme. She said: "I left it in my locker."

Comments: Emma is usually reluctant about reciting in class. I feel that I should persuade her to make a report from the front of the room, but I haven't been able to. Because I thought she would feel more secure if she could read rather than extemporize a report, I arranged to have her read her theme. I believe her absence yesterday was purposeful, in order to avoid reading her theme.

The comment section of a given anecdotal report, as just illustrated, can throw more light upon the incident itself. This section, moreover, can be used to draw a few tentative conclusions not only about the incident but also about a student's behavior pattern. As additional anecdotes are collected, the accuracy of the observer's comments can be checked by the observer himself or by another person.

In his book, *Techniques Of Guidance*, Traxler¹ suggests another modification of the anecdotal record. He proposes that the report be divided into three sections: (1) the incident, (2) the observer's comments, and (3) the observer's recommendations. While some advantage is to be gained by the addition of the third section, it may complicate the anecdotal record. It has a potential disadvantage in that it may give the impression that a single observation is sufficient for recommending a remedial measure. Nothing is further from the truth; as Traxler insists, each observation does not necessarily warrant a recommendation. With him the authors agree that, in any modifications of the objective anecdotal method, the observer should be encouraged to make a comment or recommendation only if he feels it essential.

¹Arthur E. Traxler, *Techniques Of Guidance* (New York: Harper and Brothers, 1945), chap. VII.

HOW CAN ANECDOTES BEST BE HANDLED?

One of the major reasons for recording observations, as mentioned earlier, is to secure a developmental record of a given student. This clearly implies that anecdotes must be preserved over a period of time so that they can be used in the analysis of the development of that student's behavior. Toward this objective, the mechanics of keeping a cumulative record of anecdotes are worthy of consideration here.

The easiest and simplest plan for preserving the anecdotes is to file them as a part of a student's cumulative record. In schools using a folder-type cumulative record, such a procedure presents relatively few problems. For example, schools which follow this plan ordinarily employ a form like that in Figure 10 which can be kept conveniently in the regular cumulative file. On this form the counselor or teacher records the student's name, the incident, and other pertinent information.

In some schools, the teachers keep the filled-out anecdotal cards in their own files. In other schools, however, they turn over the cards to the persons who are responsible for counseling with the students for whom cards have been filled out. According to the latter system, which is preferable, the counselors desirably follow the practice of reading all anecdotes before the cards are filed. This enables counselors to identify students in need of immediate help. It also provides counselors with the opportunity to glean information which is of value in working with students and teachers.

Some counselors, furthermore, keep a tally of the number of anecdotes which are reported for each student.

At intervals the counselors who are keeping the tally records check on those students for whom a great many anecdotes have been reported and on those for whom no anecdotes have been received. In the authors' experience, a high proportion of the students about whom teachers have written many anecdotes are in need of counseling. A small proportion of students with no anecdotes have been found to need the help a counselor can give. In the case of either type of student, the advantages which the counselor gains by reading anecdotes about each student and by keeping a tally of the number written about him are usually well worth the time involved.

HOW CAN ANECDOTES BE SUMMARIZED?

Filing the original forms upon which anecdotes are written has one distinct disadvantage. The anecdotal forms for a given student become an overly bulky part of his cumulative record. To avoid this drawback, a few schools use a summary form which has headings similar to those shown in Figure 11. As each written anecdote is turned in, a typist copies it on this form. Thus, this form comes to contain a running record of anecdotes.

FIGURE 11
A SAMPLE SUMMARY FORM OF ANECDOTAL RECORDS

Name of Student _____		
Date and Observer's Name	Incident	Comments

Such a form can obviously be read with greater ease than can a collection of anecdotes on separate cards or sheets. Although this plan is desirable, it is unfortunately too costly for some schools.

A school with a faculty who believe in the anecdotal method will accumulate a large number of written anecdotes. Some students may have as many as 100 anecdotes reported within a single year. Such students are the exception, of course. Most students have from 12 to 15 anecdotes assembled in their files. If even a small number of anecdotes is recorded every year for the average student, over a period of years anecdotes about him will constitute a comparatively extensive document. Because of the size of this document, its study becomes a very time-consuming task. Recognizing this fact, many guidance workers advocate the periodic preparation of summaries of the anecd-

notes. They also recommend that, as soon as a summary is made, the anecdotal reports upon which it is based be placed in a storage file or be destroyed. At all times precautions should be taken to prevent anecdotal reports from falling into the hands of students, non-professional staff members, or other unauthorized persons.

The summary of anecdotal reports helps to clarify the developmental trends of a student's behavior pattern. When the anecdotes about him are summarized, these trends tend to emerge clearly and can be related to each other. Even though certain teachers may not have the time or skill required to summarize perfectly a series of anecdotes about a student, their efforts to prepare summaries help them to gain a better understanding of that youth.

In citing the values of preparing summaries, one should not overlook the fact that each student is thereby guaranteed consideration. One of the cardinal sins of many guidance programs is their failure to serve *all* students needing help. If a periodic summary is required for each student, however, at least one staff member studies his record in an attempt to analyze his development.

Which staff member should make the summaries? Ideally, he should be a well-trained counselor. He should have a background of preparation for and experience in guidance work. He should also be thoroughly familiar with his school and its faculty. All schools do not have counselors with such qualifications. Consequently, these schools must compromise between what is ideal and what is possible. In no case, however, should the compromises involve the assignment of the summarizing task to persons who do not recognize the limitations to be observed in writing summaries. It is better to have no summaries whatever than to have summaries that draw conclusions which are not supported or justified by the anecdotal reports themselves.

Example of a Competent Summary of Anecdotes

To illustrate a competent summary, several anecdotes and the summary of them are given next. The anecdotes are about a 15-year-old boy in the ninth grade.

<i>Date</i>	<i>Observer</i>	<i>Anecdotal Record</i>
Sept. 15	Miss Green, Latin	<p><i>Incident:</i> Charles has been the best in the class in his translations, but when I call upon him for grammar, he has a great deal of difficulty. I asked him to stop after class today. When I talked to him about the discrepancy between his translations and his ability to answer questions, he flushed noticeably. When I asked him if he were copying his translations from some of the other students he replied: "No, ma'am, I am new in school and I do not know any of the students here. My father helps me with my Latin." He then went on to say that he wished he knew how to make friends with the other students in the class.</p> <p><i>Comment:</i> I believe that Charles is making a real effort to be successful in school. I cannot understand what motivates him to spend so much time with his father on getting perfect translations.</p>
Sept. 22	Mr. Grine, History	<p><i>Incident:</i> Today in class we had a project in which the students were to exchange reports. I left it up to each member of the class to select a partner to work with. Charles came to me after class and said that he didn't know anybody with whom to exchange reports.</p> <p><i>Comment:</i> It seems strange that in the third week of school Charles wouldn't know some member of the class with whom he could arrange to exchange reports.</p>
Sept. 24	Miss Korse, English	<p><i>Incident:</i> The theme assigned for this week was entitled, "What I Would Like to Get Out of School." Charles wrote a theme which had as its central thought the getting of friends. When he laid it on my desk as he left the room, he said: "Miss Korse, this theme says what I really want. Gosh, I wish I could go back to my old school."</p> <p><i>Comment:</i> Charles seems to have real difficulty in making friends. At the first oppor-</p>

tunity I have, I plan to talk with him about ways he can make friends.

Oct. 10 Mr. Dooley,
Science

Incident: Charles brought a bat to class today that he had captured and stuffed by himself. He told the class about how he stuffed the bat, using arsenic and cotton.
Comment: I was struck with the similarity of Charles's performance with that of Mary Lou's the day before yesterday. Mary Lou is very popular in this class, and when she brought her butterfly collection to the class she received a great deal of attention. Charles seemed pleased with the attention that he got while he was displaying his bat.

Oct. 15 Mr. Grine,
History

Incident: For the past several days we have been discussing the variety of governments that exist in the nations throughout the world. In our discussion it was pointed out that there are many small countries about which few people know anything. Today Charles brought his stamp collection to show to the class. He asked if he could tell about the little countries from which he had stamps. He said: "I don't think all of the class members know that these little countries exist, but I do, because I read about them when I get stamps." I noticed several of the boys talking with him after class.

Comment: Charles seemed to enjoy the attention he got from the class.

Oct. 20 Miss Korse,
English

Incident: I announced in my English class today that we would have tryouts for the freshman debate team. Charles signed up for the tryouts and said: "Even if I don't make the team maybe I will get to know some of the kids better."

Comment: Charles seems to be making a real effort to make friends in school.

Nov. 5 Miss Green,
Latin

Incident: Charles made an excellent report on Latin culture today. He told the class his father had taken lots of Latin and he

had helped him prepare the report.

Comment: Charles seems to be doing things which will attract attention to himself. The report which he read in class today, I believe, was far superior to any which he alone could prepare. I still haven't discovered what motivates him to try so hard to excel in class.

- | | | |
|---------|------------------------|---|
| Dec. 10 | Mr. Dooley,
Science | <i>Incident:</i> This morning all first-hour classes discussed plans for getting contributions of food for the annual Christmas baskets. Charles volunteered immediately to head up the collection of food for our class. |
| Jan. 8 | Mr. Dooley,
Science | <i>Incident:</i> This week we have been discussing reproduction. Ordinarily Charles participates freely in class discussions. When I called upon him this week he has replied each time: "I do not know, sir." |
| Jan. 13 | Miss Korse,
English | <i>Incident:</i> Charles seemed to be dejected the past several days. He has come and gone from class all alone. I decided to have that talk with him about making friends which I had promised myself I would do earlier in the year. During the course of our conversation Charles burst into tears and said: "Miss Korse, I can't understand why I didn't make one of the literary clubs. As I wrote in my theme last fall, I want to make friends. And I have tried real hard, but I guess I don't know how to do it."
<i>Comment:</i> Charles is, I believe, a very lonely boy in our school this year. I am afraid that he feels that school is a dreary place because he doesn't seem to have enough friends. |
| Feb. 18 | Mr. Dooley,
Science | <i>Incident:</i> The class was planning a field trip. Charles volunteered that his father would be glad to take a group of students in his car. When I indicated that that would be satisfactory, he invited several of the most prominent boys in the class to ride in his car with him. |

Comment: Charles seems to be having a difficult time becoming adjusted to our school. This incident is typical of many others in which he takes the lead in trying to make friends, but he is becoming so aggressive that I fear the other students are becoming suspicious of his motives.

Mar. 6 Miss Korse,
English

Incident: A few days ago Charles asked me if he couldn't get some of the other students to work with him and organize a dramatic skit from some of the scenes of *Ivanhoe*. I encouraged him to do so. Today he came and said he couldn't get anybody interested in his idea for a play.

Comment: I am afraid that Charles has done so many things to put himself in the limelight that other students are reacting against him.

Apr. 11 Miss Korse,
English

Incident: Charles came and asked me how to write invitations to a party. He said that he was planning to have a party and that he wanted to make it a "real nice party" and so wanted to issue invitations. When I asked him whom he planned to invite, he said: "Oh, some of my friends and some of the kids who can help me get into a literary club next year."

The reading of these anecdotes clearly indicates that it would be helpful if they were summarized. This summary will not only save the reader's time; it will also highlight the trends of Charles's development. To illustrate this value, the following summary of these anecdotes has been prepared. The summary includes pertinent information gathered from sources other than the recorded anecdotes.

Charles transferred into this school at the beginning of this year. He had difficulty in making friends. As time went by, he resorted to many devices to attract attention to himself. He has become more aggressive; in fact, one of his teachers wonders if he has not become so aggressive that his classmates are reacting against him. Charles needs help in overcoming his problems of social adjustment.

WHEN SHOULD ANECDOTES BE SUMMARIZED?

Some schools have found it inconvenient to leave all the summarization for the busy days of the last weeks of the school year. Consequently they have adopted the plan of staggering the times when anecdotes are summarized. They prepare summaries for a certain portion of their students each month. For example, during September, the anecdotal reports for all students whose last names begin with A, B, C, and D are summarized. In October, summaries are prepared for all students whose last names begin with E, F, G, and H, and so on throughout the rest of the school year.

Many schools are not fortunate enough to be able to summarize the anecdotes for all students during a given year. These schools, therefore, resort to a less desirable practice. The anecdotes about a student are summarized only when he leaves school by reason of drop-out or graduation. In this case, the summarizing is little more than a "house cleaning" of the student's cumulative record. True, in this process, the summarizer usually skims through and then destroys the anecdotal notes about the student. Because some of these notes report trivial or misleading incidents, they should not become part of that student's permanent record. True, also, if the summary is well prepared, it can be of inestimable value to the school officials who are called upon later for recommendations of that former student.

A preferable plan is to prepare summaries at transitional points in the student's educational career. A school might plan, for instance, to prepare summaries at the close of (1) the primary grades, (2) the upper elementary grades or the junior high school, and (3) the senior high school. Such a plan, of course, provides three summaries, each of which has unique values. After each summary except the last, there is time for the school to take action in line with the trends pointed out in that summary.

HOW CAN DESCRIPTIONS OF BEHAVIOR BE OBTAINED?

In organizing an anecdotal plan, the primary problem is devising satisfactory procedures for collecting descriptive statements of student behavior. All problems regarding the designing

of the forms, the filing of the filled-in forms, or the preparing of summaries are relatively insignificant when compared to this one. The crucial problem is how to get teachers to put **their observations in writing.**

Some schools require teachers to write a certain number of anecdotes each week. This rarely produces the desired results. Teachers quite naturally resent being forced to write anecdotes. Their resentment is likely to be greater if they do not see the usefulness of such anecdotes. In most schools using this plan, the principal arbitrarily determines the number of anecdotes to be written. If he requires an unreasonable number of anecdotes, he adds fuel to the fire of teacher resentment.

A few schools, however, have modified this plan in an interesting manner. Early in the school year they hold faculty meetings where the values and limitations of the anecdotal method are discussed. Through these discussions, a real effort is made to convince teachers that they will gain much of value from anecdotes and that they rightfully have the responsibility for preparing such written reports. With this introduction, the faculty members are requested to begin reporting anecdotes. At the same time they are told that a record will be kept of the number of anecdotes reported.

After a month or so, the faculty is asked to consider the number of anecdotes which can reasonably be expected. Thus the teachers and the administrator together decide upon the number of anecdotes to be recorded monthly by each teacher. Because teachers have helped make the decision, they are more likely to abide by it and less likely to resent it.

Both of these plans should allow the teacher to report observations about whichever students he chooses. Earlier in this chapter it was pointed out that for some students no observations will be recorded, while for other students a great many observations will be reported. To make sure that all students are observed, some schools assign each teacher certain students to observe. Each teacher is, of course, encouraged to report any significant incident which he observes whether or not this incident involves any of the students assigned to him.

Although this plan guarantees that each student will be observed, it does have limitations. One of the most important

is the feeling of compulsion generated; teachers quite naturally resent compulsion. Therefore, being forced to observe certain students is not likely to be an effective incentive toward making significant observations. Because teachers have assigned responsibility for certain students, they tend to limit their observations to these students. This tendency is so marked in some schools that their anecdotal plans lose much of their potential value.

The methods for collecting anecdotes described in the preceding paragraphs can be expected to produce only mediocre results. They are essentially surface devices; they fail to get at the root of the problem. The best means of bringing into operation a successful plan for collecting anecdotes is in-service education of staff members. In-service education can help teachers recognize the value of reporting observations. It can also give teachers an understanding of how to use anecdotal records in their work. Teachers who have such understanding are willing to co-operate in the preparation of written anecdotes. In this connection, they might well read the book, *Helping Teachers Understand Children*.² It clearly points out the values of in-service education. It also contains many helpful suggestions for organizing an effective in-service program for educating teachers in the techniques of writing and using anecdotal records.

WHAT IS THE OBSERVER-EVALUATION METHOD?

Attention is now given to the second method of recording observation—*observer-evaluation*. As cited earlier, the *observer-description* method in its purest form reports only the facts about an incident. This method is improved, it was seen, if it is modified to include the observer's comments as well as his factual descriptions. Observer evaluation departs markedly from the practice of describing the incident. In fact, an observational report prepared according to the evaluation method ordinarily does not include any descriptive material recorded by the observer. Rather, such a report usually presents only the evaluations the observer has made on the basis of his observations.

²Staff of the Division of Child Development and Teacher Personnel, *Helping Teachers Understand Children* (Washington, D.C.: American Council on Education, 1945).

There are many variations in the ways observer evaluations are made. But they all have as their core the fact that one person (the student) is being evaluated by another person (the teacher). In other words, one person is *rating* another. Ordinarily, observer evaluations are reported on a prepared blank known as a *rating scale*.

All rating scales have two dimensions: first, the *characteristics* which are rated; and second, the *evaluations* of these characteristics. These two dimensions can be illustrated by considering a hypothetical situation. Suppose that Miss Jones wishes to rate the students in her first-hour class. Since there are so many facets to each student's make-up, she first decides which characteristics she is going to rate. She may, for example, choose to rate the students' initiative, co-operativeness, and dependability. After selecting the characteristics, she faces still another decision—how she shall express her evaluations. She may use letter grades, A, B, C, D, and E, or such phrases as "above average," "average," or "below average." In essence, she chooses a scale which allows her to evaluate her students in terms of some more or less fixed standard.

WHAT CHARACTERISTICS SHOULD BE RATED?

Consider the first dimension, the characteristics. What characteristics should be included in a rating scale? More specifically, what characteristics are commonly included in scales used in schools? How are these characteristics identified? The answers to these and similar questions can serve as guideposts to schools employing the *observer-evaluation* method. But these guideposts should not be looked upon as prescriptions. In preparing rating scales as in using anecdotal methods, each school needs to develop its own plan in terms of local conditions. Although there is no one best plan for all schools, a school can employ certain established principles which should govern the design and the use of rating scales. Of these principles, the most important are presented next.

1. *The characteristic should be clearly defined.* One high school used a rating scale which listed the following characteristics: Co-operativeness, Dependability, Industry, Initiative, Self-Control, and Personal Grooming. On the scale, teachers

were asked to rate all students on the given characteristics. Little agreement was found among the various ratings of each student, because to one teacher "co-operativeness" meant docility in the classroom; to another teacher "co-operativeness" meant the ability to work successfully with fellow students; to still another teacher "co-operativeness" meant both of these plus other relationships.

The point is that, although all teachers were rating a student's co-operativeness, each teacher was concerned with a different definition of that trait in the student. Hence, any similarity in the teachers' ratings was accidental and not necessarily an agreement regarding the student's co-operativeness. A similar problem was presented in each of the other student characteristics to be rated. To avoid this difficulty, each characteristic must be defined, as the next example shows.

The Yankton (South Dakota) High School has devised a rating scale in which each characteristic is briefly defined. For example, in rating co-operation, the rater is instructed to "consider his [the student's] ability to get along with others, his adaptability and his willingness to do his share of the work." Every teacher in the Yankton High School may not accept completely this definition of co-operation, but the definition does provide a common frame of reference for all teachers in the school as they evaluate their students' behavior in terms of "co-operation." This is one of the principal advantages of defining characteristics.

Agreement on the definitions of characteristics can be increased if teachers discuss them. Some schools devote entire faculty meetings to such discussions before rating scales are finally drafted and introduced. Other schools use manuals which describe in detail each characteristic to be rated. A few schools have teachers record observed incidents which support their ratings. These incidents throw light on the rater's conception of the characteristic being rated.

Whatever the method employed, the school should aim to obtain agreement among raters on the nature of the student characteristic to be evaluated. The persons interpreting a rating, as well as the raters themselves, must agree upon a definition of the characteristic.

2. *The characteristic should be readily observable.* Teachers should not be asked to rate students upon characteristics which are difficult or even impossible to observe. In reviewing a large number of rating scales before writing this chapter, the authors came across occasional examples of such characteristics. On one scale they found that teachers were asked to evaluate students on the following: "If teacher left study hall or class, extent to which student could be trusted." Asking a teacher to make such a rating demands that he judge a student's behavior without observing it.

It is true, of course, that teachers ordinarily do not observe certain aspects of a child's development. To illustrate, because of the taboos of society, teachers usually do not observe or evaluate the sexual adjustment of students.

The characteristics to be evaluated should be such that they can be readily observed during the normal course of events. Because the characteristics must always be observed, teachers should not be required to rate a student on every characteristic appearing on a rating scale. If the rater, for instance, has had insufficient opportunity to observe the student's behavior in terms of a given characteristic, his rating will be of little if any value. For this reason, most good rating scales have instructions which contain a phrase similar to this: "If teacher has no basis for judgment of any of the traits, please do not mark it." All rating scales should have such instructions.

The complex problem of designing a method of reporting evaluations has had many suggested solutions, each of which has its advantages and disadvantages. There appears to be no perfect method. Nevertheless, in developing and applying rating scales, several methods have been used successfully by schools. Some of these methods are described next.

3. *Degrees of the characteristic must be defined.* One of the most successful methods of reporting evaluations defines varying degrees of a particular characteristic. To illustrate, the following items are quoted from the *Minnesota Rating Scale for Personal Qualities and Abilities*.³ Each characteristic has

³*Minnesota Rating Scale for Personal Qualities and Abilities*. Devised under the direction of Clara M. Brown by the Faculty and Graduate Students of the Division of Home Economics, University of Minnesota. (Minneapolis: University of Minnesota Press, 1938.)

three defined degrees. In using this scale, the rater reads the descriptions of the degrees and selects the one which most nearly applies to the student.

4. Responsibility — Careless, not dependable; often tardy or absent	Reliable and punctual; makes up time lost by absence	Stimulated by responsibility and carries it well, even under difficulties. Always on time
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8. Co-operation—Tries to get the easiest job; antagonizes others	Carries own share of work; does not antagonize others	Always carries own share of load, regardless of reward. Works well with others
--	---	--

17. Personal appearance—Poorly groomed; clothes unbecoming or inappropriate; poor posture	Reasonably well groomed; clothes becoming and appropriate; fairly good posture	Immaculate; clothes show discriminating taste; very good posture. Impresses people favorably
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Such a scale has many advantages over one which uses "below average," "average," or "above average" to describe the ratee's degree of possession of the characteristic. The Minnesota Rating Scale, for example, provides a frame of reference which is defined in terms of actual behavior. A rating of "carries own share of work, does not antagonize others" is considerably more meaningful in terms of the individual's behavior than a rating of "average." All too often "average" is a generalized term without reference to a particular group.

The Minnesota Scale, however, is weak to the extent that it does not give raters a clear-cut notion of the boundaries of a given characteristic *before* they begin considering the degree of that characteristic possessed by the student being rated. This weakness does not appear in the rating scale used in the Washington High School, Sioux Falls (South Dakota). Three of the twelve items in the Sioux Falls scales are reproduced here.⁴

⁴These items were adapted from a rating scale developed at Washington High School, Sioux Falls, South Dakota. Mr. C. R. Beck, Director of Guidance, graciously provided a copy of the scale.

		<i>Below</i>		<i>Above</i>	<i>Su-</i>
		<i>Inferior</i>	<i>Average</i>	<i>Average</i>	<i>perior</i>
IV. RELIABILITY	Neglects	Often	Reliable	Willing	Thor-
Dependability.	promises,	needs	on most	to as-	oughly
Trustworthi-	obluga-	super-	occasions.	sume	depend-
ness. Ability to	tions and	vision	Has to	obluga-	able
get along with-	appoint-		be	tions,	
out supervision.	ments.		prompted	Keeps	
Honesty	Dis-			appoint-	
	honest			ments	
V. CO-OPERATION	Disagree-	Slow	Usually	Happy	Eager
Ability to get	able.	to re-	agree-	in	to
along with	Antago-	spond.	able.	team-	do
others. Adapt-	nistic	Not	Generally	work.	more
able. Tactful.		willing	willing	Always	than
Agreeable.		to help	to help	agree-	required
Cheerful				able	
VII. LEADERSHIP	Shuns	Prefers	Will take	Often	Good
Confidence.	responsi-	plans	responsi-	shows	judg-
Initiative.	bility	of	bility if	initia-	ment.
Good		others.	asked.	tive.	Ac-
judgment.		Seldom	Leads in	Arouses	cepted
Enterprising.		leads	minor ac-	enthusi-	by
Respected. Has			tivities	asm	others
a following					as
					genuine
					leader

The Sioux Falls scale differs from the Minnesota Scale in another important respect. The former is a five-degree scale; the latter a three-degree scale. Many persons have expressed dissatisfaction with scales which allow only three, five, or seven degrees of each characteristic. They feel that when such scales are used, the evaluations are too gross. Their objections are met in large part by a type of scale known as the *graphic rating scale*. In this scale the degrees of each characteristic are arranged so that the rater can make as fine distinctions as he wishes. This feature of a graphic rating scale is indicated in the instructions and sample characteristic presented on the following page.

Instructions: Place a check mark on the line at the point which best describes the student. The descriptive statements under the line indicate variations in the characteristic being considered. You need not check only at these points. If you wish, you may place your check any place between these points.

CHARACTERISTIC	RATING SCALE				
<i>Industriousness—</i>	|	|	|	|	|
Indolent, little effort. Needs much prodding	Frequent-ly does not com-plete required work	Gets re-quired work done, but no more	Steady worker. Occa-sional-ly does more than re-quired	Eager. Usually does more than re-quired	

Advocates of the graphic rating scale claim that it not only allows greater flexibility in ratings, but also is more easily understood than most rating scales.

HOW CAN THE ERRORS OF RATINGS BE REDUCED?

The errors which occur in the rating of human traits are well known. In fact, they have been so well recognized that most discussions of ratings use a standard terminology to describe them. These errors are of four main kinds: (1) personal bias, (2) central tendency, (3) halo effect, and (4) logical error.

The personal bias error is introduced when the observer rates all individuals too high or too low. It is sometimes referred to as the error of lenience or severity. This error can be minimized by a statistical procedure in which each observer's ratings are scaled to an arbitrary mean and standard deviation. The determination of the scaled ratings is similar to the computation of standard scores, as described in Chapter 2.

Most schools, however, have found that the procedure of scaling ratings in terms of equated standard scores is too complex or too expensive to be practicable. Consequently, these schools have depended upon in-service education to help prevent errors due to personal bias. In such a school, each teacher's

ratings are tabulated and the means of these ratings are computed. These means may show that, in comparison with other teachers, a given teacher is consistently over-rating or under-rating students. When this teacher is identified, a discussion with him will help to bring his ratings into line with the ratings of other teachers.

The error of central tendency describes the disposition of some raters to give ratings which are seldom if ever at the extremes of the scale. In other words, such a rater assigns most of his ratings at or near the midpoint of the scale.

The tendency of a rater to avoid the extremes of the rating scale cannot easily be overcome because its origin is grounded deeply in the rater's understanding of individuals as well as in his own personality. For example, the rater may not be aware of the wide variations that exist in a given human characteristic; or, he may not be sensitive to these variations. If so, there is little prospect of improving his rating without first correcting this basic deficiency. The rater may be so insecure personally that he cannot rate others favorably or unfavorably. If so, he is unlikely to use the extreme categories of the rating scale.

The halo effect is usually operating when the rater rates an individual the same or about the same on all characteristics. Halo errors appear in ratings which the rater gives to a single individual, whereas personal bias and central tendency errors appear in the ratings which the rater gives to a number of individuals.

In essence, the halo effect is the result of a mental set on the part of the rater toward the individual being rated. Miss Walls may be favorably impressed by Frank's scholastic success. She quite rightly rates him high on this characteristic. But if this teacher rates him high on social adjustment and does so solely because she rates him high on scholastic standing, her error is due to the halo effect. As just illustrated, the presence of the halo effect is usually revealed when a teacher gives a student the same or about the same rating in all characteristics.

Raters can be helped to avoid the halo effect in at least two major ways. First, a rater can be aided if a given characteristic is clearly defined. This tends to sharpen the differences between the characteristics. As these differences become more obvious,

group sheet to the sheet or card of each student. This task can be performed by a competent clerical worker. If such clerical help is not available, however, the plan is probably too expensive of teacher or counselor time.

The fourth error commonly found in ratings is known as the *logical error*. It results from a misunderstanding of the characteristic to be rated. A rater may avoid the errors previously described and yet commit a logical error. He may, for example, accurately rate students according to *his* concept of co-operation. But if he defines co-operation narrowly, or if his co-workers do not understand what he means by co-operation, his ratings have relatively little value for others. This difficulty can be overcome, in large measure, through sharpening the definition of each characteristic and through providing opportunity for raters to discuss and agree on the nature of that characteristic.

Further to clarify the meaning of a characteristic, a few schools have added another column to their rating scales. In this column, the rater cites an example of the student's behavior which supports his rating. Such an example reveals the kind of behavior which the rater is evaluating when he considers that characteristic.

The four kinds of errors described in this section are commonly found in rating systems. They are not, however, inherent in the rating systems themselves. These errors can be eliminated or at least reduced to the point where they do not jeopardize the value of the ratings. This can be done through a carefully-designed rating scale and through an effective program of in-service training.

HOW CAN RATINGS BE SUMMARIZED?

A number of research studies have shown that the reliability of ratings increases if the judgments of a number of persons about the same individual are pooled. The pooling of ratings is not a simple task, since the ratings are not additive in the strict sense of the word. Consequently, many of the statistical procedures described in Chapters 2 and 3 are not applicable. But the limitation in the mathematical manipulation of ratings is not the only difficulty encountered when ratings are summar-

rized. Equally if not more important, from the guidance point of view, is the necessity for indicating variability as well as agreement among the ratings. An example will clarify the point.

Joe's co-operation is rated by three teachers. The first teacher rates him average in this trait, the second, below-average, and the third, above-average. In summarizing these ratings, if the assumption is made that the below-average rating cancels out the above-average rating, then the conclusion will be that Joe's co-operation is average. Such a conclusion, however, does not accurately reflect the evaluations made by two of Joe's teachers. In fact, two out of three disagree with such a conclusion!

The problem of summarizing the ratings of Joe is further complicated when they are compared with the ratings of Mary. Three teachers rate Mary's co-operation as average. When these ratings are pooled, the resultant rating is also average. But Mary's pooled rating of average is quite different from Joe's pooled rating of average. The qualitative difference between Joe's and Mary's standings on co-operation is lost if the ratings of each student are pooled in the manner just described.

To avoid such difficulties, many schools use a method of pooling that portrays all ratings. In this method, each rater's evaluation is displayed in a single table. This table is illustrated in Figure 13. Note that each teacher's rating is identified by placing his number, 1, 2, or 3, in the appropriate column.

FIGURE 13
SUMMARY OF RATINGS ON CO-OPERATION

Name of Student	Ratings*		
	Below-Average	Average	Above-Average
Joe	1	3	2
Mary	—	1, 2, 3	—
Oscar	2	—	1, 3

*Put number of person making rating in column. Identify this person by recording his number and name below.

1. Miss Smith
2. Miss Wells

3. Mr. Young
4. _____

This plan or a modification thereof makes it possible to pool the judgments of raters without obscuring the differences in their evaluations.

SUMMARY

There are basically only two methods of recording observations, namely, observer-description and observer-evaluation. Anecdotal records which report only the facts of an incident employ the observer-description method. Rating scales use the observer-evaluation method. While some schools use only one method, other schools employ a combination of the two methods. Certain schools, for instance, use an observational form on which the teacher records not only each anecdote or incident but also writes his evaluative comments. Although the procedures for recording and evaluating incidents have limitations, steps can be taken to help assure that these procedures are useful in guidance work.

SUGGESTED READINGS

(See also list at end of Chapter 4)

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The Interview as a Fact-Finding Device

IN ANALYZING the individual, one of the best techniques is that of the interview. The interview has been defined as "a conversation with a purpose." That purpose, of course, may vary from interview to interview. But in this chapter we are concerned with only one kind of interview—the fact-finding interview. This concern leads to such key questions as these: What is the fact-finding interview? How does it differ from other kinds of interviews?

All interviews have the following elements in common: (1) a person-to-person relationship; (2) a means of communicating with each other; and (3) an awareness on the part of at least one of the persons of the purpose of the interview. These same elements are present in many other inter-personal situations, but not all of these situations are "interviews," as the term is usually employed. Two lovers talking with each other as they walk through a park are not ordinarily thought of as having an interview. Nor is it customary to label as an interview a housewife's conversation with the butcher about the price of meat.

The term "interview" has come to designate certain kinds of situations in which the three aforementioned elements are present. In other kinds of situations, although all the same elements are present, other terms are used to denote the situation. To illustrate, a person suspected of a crime is *interviewed* by a newspaper reporter, but he is *interrogated* or *questioned* by the police. A parent *visits* with his child's teacher, but the teacher is *interviewed* by the superintendent when he applies for a position.

An additional way of defining kinds of interviews is to use a modifier, such as *fact-finding* interview, *counseling* interview, *psychiatric* interview, *employment* interview, or *exit* interview. This chapter, as stated earlier, is concerned with the fact-finding interview as an aid in studying the student.

WHAT ARE THE PURPOSES OF THE FACT-FINDING INTERVIEW?

In guidance work, the fact-finding interview has three major purposes:

1. To *supplement* information gathered in other ways
2. To *verify* information which has been collected previously
3. To *observe* mannerisms, physical appearance, and other non-verbal clues

The fact-finding interview is not used exclusively for only one of these purposes. Commonly, it serves all three of them. In order to explain these purposes, each of the following illustrations portrays a single purpose.

To supplement information. A teacher knew that this semester John was having difficulty in getting his assignments in on time. Study of his cumulative record did not reveal the reasons for this. In a fact-finding interview, John disclosed that much of his out-of-school time was spent in caring for his mother who had been sick for several months. This fact, supplementing the information previously collected, enabled John's teacher to understand him better.

To verify information. Mary's cumulative record indicated that her vocational choice was nursing and that, after graduation from high school, she planned to attend the state university. This information was recorded during her sophomore year in school. During the girl's senior year, the counselor learned of certain scholarships which could be made available to Mary if she still planned to study nursing. He was fearful that Mary might be unduly influenced to go into nursing if she learned at the beginning of the interview of the availability of these scholarships. So, before telling her of them, he felt it wise to determine if the girl's present career plan was about the same as it had been two years earlier. Said another way, he employed

the fact-finding interview to verify the information which he had found in Mary's cumulative record.

To observe. A counselor was informed by several teachers that Jerry did very well on written assignments but refused to give oral reports or to enter into class discussion. A thorough study of the boy's cumulative record revealed two key facts: First, the boy's mother and father were both foreign-born. Second, the language of the country of their birth was spoken in the home. These facts seemed to provide some clues to an explanation of the boy's behavior. For the purpose of observing Jerry's reaction to each of these clues, the counselor planned a fact-finding interview. During the interview, the counselor noted that Jerry spoke English with a distinct accent. This observation led to a discussion of Jerry's feelings about his accent.

Because the purposes just illustrated are often interrelated, all three may be present in a single fact-finding interview, as the following example shows.

Example of an Interview with Three Purposes

In a Midwestern high school the counselor conducts a fact-finding interview with each senior after this student has completed a personal data blank. The purpose of the interview is to determine the student's post-school plans. A part of the interview with one student, George, is reproduced herewith. The purpose of each of the counselor's statements is identified by the word appearing in parentheses—to *supplement* information, to *verify* facts, or to *observe*.

COUNSELOR (verify): Well, George, I see by your personal data sheet that you enjoy driving a truck.

GEORGE: Yes, I do.

COUNSELOR (verify): I also note that your father is in the hauling business.

GEORGE: Yes, that is what he does. Sometimes I drive the truck, too. I have a license.

COUNSELOR (observe further reaction to "license"): How old do you have to be to have a driving license?

GEORGE: Sixteen.

COUNSELOR (supplement) : How well did you do in driving class in school?

GEORGE: I did all right. I liked it, too.

COUNSELOR (supplement and verify) : Are you going to follow that after you get out of school?

GEORGE: I don't know. I suppose I will have to help the old man. Maybe.

COUNSELOR (supplement) : Have you thought much about what you are going to do?

GEORGE: I like bookkeeping. I thought some about bookkeeping. I have looked into the field to see what possibilities there are.

COUNSELOR (supplement) : Have you thought about anything else?

GEORGE: I would really kind of like to . . .

COUNSELOR (verify) : Go ahead, George.

GEORGE: I would kind of like to go to college. Mother wants me to go, too.

COUNSELOR (supplement) : What college would your mother like you to go to?

GEORGE: She doesn't say much. Especially when Dad's around.

COUNSELOR (supplement, verify, observe) : Doesn't your father want you to go to college?

GEORGE: He doesn't say. He's too busy.

COUNSELOR (supplement, verify) : What course would you take if you did go to college?

GEORGE: I would like mathematics.

COUNSELOR (observe) : You have done well in mathematics?

GEORGE: I got A and B in math.

COUNSELOR (verify, observe) : I notice here that your likes are math and bookkeeping. I also notice that your dislikes are social studies and history.

GEORGE: I don't know why I don't like social studies.

COUNSELOR (supplement, observe) : Why do you like math and bookkeeping?

GEORGE: It just comes easy to me. I like it. I can get it, and it has some sense to it, and we have a swell teacher.

COUNSELOR (supplement, observe): Those are important reasons. Could you see sense to the subjects you didn't like?

GEORGE: I could see some sense to them.

COUNSELOR (supplement): What are some of the activities that you would like to participate in?

GEORGE: I don't have time for activities. I always have to get home to help the old man.

COUNSELOR (supplement): Have you belonged to any of the clubs?

GEORGE: I don't have time.

COUNSELOR (supplement and observe): What if you did have time? What would you take part in?

GEORGE: I would like to join the stamp club. My mother started me on that.

In this interview with George it is quite clear that the counselor did not adhere exclusively to a single purpose. Rather, he used the interview to supplement information, to verify other facts, and to observe George's reaction. Most fact-finding interviews serve a similar variety of purposes.

WHAT ARE THE PARTS OF A FACT-FINDING INTERVIEW?

There are three identifiable parts in or phases of a fact-finding interview—the opening, the body, and the closing. At times, when listening to an interview or reading a transcript of it, the identification of each of the parts is difficult because they tend to overlap. But the parts can be considered as being independent of each other in the development of this presentation.

The *opening* of an interview has as its purpose the establishment of a good relationship between the interviewer and the interviewee. In this phase of the interview, the interviewer has the major responsibility for its success. His aim is to develop rapport with the interviewee. The opening, of course, is the essential prelude to the body of the interview.

The *body* of the interview is the productive part of it. During this phase the interviewer seeks the facts he desires. Sometimes the interviewer finds that the interviewee will not reveal the information desired. If so, he must continue the

opening phase in order to build a better relationship with the interviewee. At other times the interviewer finds that the interviewee will disclose much valuable information during the process of building a satisfactory working relationship. In other words, there is never a hard-and-fast line between fact-getting and rapport-building; these two phases, moreover, do not follow each other in neat sequence. Rather, they alternate throughout the course of the interview. Usually, however, as the interview progresses, the proportion of time spent in establishing rapport decreases and the proportion used in gathering information increases.

The *closing* of the interview has two purposes: to prepare for a follow-up interview and to estimate the interviewee's degree of satisfaction with the present interview. In cases when the interview time has nearly run out before the necessary facts are obtained, the purpose of the closing phase is to smooth the transition to another interview. Thus, in effect, the interviewer attempts to suspend the present interview in such a manner that its course of development can be resumed at the next interview with a minimum of time and effort devoted to the opening phase.

The other purpose of the closing phase is to end the interview so that the interviewee feels satisfied. The difficulty of achieving this purpose is usually proportionate to the depth of feelings expressed by the interviewee. On the one hand, consider a student who has been studying only occupational data as these bear upon his vocational plans. In this case the interviewee has few emotional involvements. He has little fear of the consequences if these data become known. On the other hand, consider a student who has revealed a past history of homosexual experiences. He may fear that his experiences will become widely-known. Such a student obviously will not feel satisfied with an interview that is terminated with a casual, "Well, that's all today." Rather, he should feel assured that the information revealed will be used to help him, and that the counselor understands his behavior and still accepts him as a worth-while and self-respecting individual.

The closing of the interview is tremendously important in terms of the counselor's effectiveness. Students who feel satis-

fied at the conclusion of fact-finding interviews are more likely to seek counseling interviews when needed.

HERE ARE SUGGESTIONS ON OPENING THE INTERVIEW

Rapport in the interview is not well-defined as a unitary concept, nor are the ways of obtaining it mechanical in nature. Unfortunately, as Strang points out, "rapport is too often thought of as a 'bag of tricks'—devices used at the beginning of the interview."¹ Writers with the "bag of tricks" point of view emphasize the desirability of a pleasant office, of shaking hands, of calling the interviewee by name, of paying the interviewee a compliment, of using certain phrases, and of employing similar devices. If used with discretion and sincerity, these devices have their place. But their use in a mechanical manner is quickly detected and often resented by the interviewee. In the words of Strang, "Word goes abroad that Mr. So-and-So always begins an interview with, 'What can I do to help you?'; or that Mrs. O is likely to say, 'Won't you let me be a mother to you?', to which one pert youngster replied, 'You'll have to ask my daddy about that.'"² In short, a counselor cannot depend upon the routine use of certain devices to establish rapport.

How then should a counselor build up rapport? In the early part of an interview, there seem to be certain desirable things to do or ways to behave. These are as follows:

1. *In the early stages of an interview, rapport must come first.* At these stages, content is less important than the emerging relationship between the two persons involved. Expressed another way, what the interviewer says, that is, the content of the words he uses, is far less important than the interpersonal relation which is being developed between the interviewer and the person being interviewed.

2. *In the beginning of the interview, there must be as little structuring as possible on the interviewer's part.* He should not, in other words, enter the interview with a rigid idea of where it is to go and how it is to be run. In its beginning stages, the interview must be a relatively free, unstructured situation.

¹Ruth Strang, *Counseling Technics in College and Secondary School* (New York: Harper and Brothers, 1949), p. 125.

²*Ibid.*, p. 126.

Although the interviewer may have a definite objective for the interview, he must not insist upon driving straight to that objective, without any deviation whatever. Until a satisfactory level of rapport is established, the interviewer must be content with developing a working relationship with the interviewee; only thus will the interviewer be able eventually to attain the interview's main objective.

3. *The interview must be characterized essentially by permissiveness and amorality.* This means quite simply that the interviewer allows the interviewee to talk freely and that he does not pass judgment on what the interviewee says. Thus, the interviewer helps the interviewee to acquire a feeling of freedom to say what he really thinks and to say it without fear of disapproval or hope of approval. Thus also, the interviewer helps the interviewee to gain a feeling of confidence that what he says will be accepted and understood from his point of view. The interviewer does not show disapproval by blame or approval by praise.

4. *The interview must have an appearance of helpfulness.* This appearance is created by many things—by the interviewer's own good will, tact, and gentleness. The interviewee must see that benefits will accrue to him or others by his participation in the interview; otherwise, rapport will not be established. Rapport will be gained only when the interviewee is satisfied that some help will result from the interview.

5. *The interview must provide for an optimum distribution of talking time between the interviewer and the interviewee.* Probably the greatest mistake of the beginning interviewer is his tendency to talk too much. There are no hard-and-fast rules regarding the percentage of time that each of the persons in an interview should use. In general, however, if the interviewer talks considerably more than half of the time, he will find that the interview is much less productive than one in which the interviewee talks more than half the time.

The five points taken together describe the behavior to which the name *rapport* can be given. To illustrate these and other points, the next section presents excerpts from recorded interviews.

Interview Excerpts Illustrating Various Opening Approaches

Recordings of interviews, it should be recognized, have some limitations when used for the purpose of illustrating the establishment of rapport. It is difficult to make sensible comparisons between recorded interviews which involved different interviewers and different clients. Therefore, to make comparisons easier and more meaningful, the excerpts which follow are from practice interviews in which different counselors interviewed the same student in the same situation. All the interviews from which excerpts are taken were recorded in a graduate seminar taught by one of the authors. In these interviews, the counselors were demonstrating how they would open an interview. To set a common stage, each interviewer was given the following instructions:

"Imagine that you are a counselor in a public high school enrolling 1,000 students. A student enters your office without an appointment. Your task is to find out why he is there in order to determine what you should do for him."

Approach of Counselor A. The first interview between Counselor A and the student proceeded as follows:

STUDENT (standing): I got sent in by Miss Smith, the English teacher.

COUNSELOR A (seated at desk): What seems to be the trouble?

STUDENT: I don't know.

COUNSELOR A: Why did she send you down here?

STUDENT: She thought it was a good idea to talk with you.

COUNSELOR A: The teacher sent you, did she? What is your name?

STUDENT: My name is Algore.

COUNSELOR A: What is your first name?

STUDENT: Lyle.

COUNSELOR A: I will call you Lyle. Won't you sit down? Miss Smith is the English teacher, is she not?

STUDENT (takes seat): Yes, sir.

COUNSELOR A: Which class are you in? Which year, I mean.

STUDENT: Eleven B.

COUNSELOR A: That is sort of a tough year. What sort of difficulty are you having, so that you were sent down here?

STUDENT: She said I might like to talk with you.

COUNSELOR A: Do you like English?

STUDENT: Not much.

COUNSELOR A: You like basketball, I presume?

STUDENT: Sure do.

COUNSELOR A: What position do you play?

STUDENT: Forward.

COUNSELOR A: Do you like the boys on the team?

STUDENT: They are a fine bunch. They don't study English much either.

COUNSELOR A: Tell me about some of the boys you like especially well.

STUDENT: Bill Adams, Johnny Brown, Vic Polling, William Turner—they are all in 11B, and none of them seem to have any particular interest in English. Fact is, they don't care much for the teacher and we feel that she might be holding something against us due to the fact that we do take part in athletics.

COUNSELOR A: Well, Lyle, what reasons do you have for thinking Miss Smith doesn't like you and the other boys in basketball?

STUDENT: Every Friday night when we play games we leave early and we lose quite a bit of time, and then the assignments are loaded on over the week end. And she doesn't seem a bit interested in whether we get the assignments or not.

Several points about this interview are particularly interesting. The opening questions, "What seems to be the trouble?" and "Why did she send you down here?" brought forth non-committal replies from the student. These are typical replies from a student with whom rapport has not been established. The counselor recovered from this bad start rather quickly by asking for the student's name and by offering him a seat. But note that this was not enough to establish rapport.

The question, "What sort of difficulty are you having, so that you were sent down here?" elicited the reply, "She said I might like to talk to you." This was as noncommittal as earlier replies. Here again the counselor was rebuffed when he attempted to secure information mainly because rapport had not been established. In contrast, the student gave quite frank

answers *after* the short discussion of basketball. Thus, the counselor's apparent interest in the boy's interest helped build up rapport.

Approach of Counselor B. A very different approach was taken by Counselor B. With the same student in the same situation, Counselor B opened the interview as follows:

COUNSELOR B (seated): What did you want to see me about?

STUDENT (standing): The English teacher sent me.

COUNSELOR B: What period were you in?

STUDENT: Eleven B English.

COUNSELOR B: Did she give you any reason for seeing me?

STUDENT: No.

COUNSELOR B: I would like to make an appointment with you.

Could you come in tomorrow at this period?

STUDENT: I have English.

COUNSELOR B: If you can come in this period, I will see your teacher about your having an appointment with me at that time. I will send a notice down and get you out of class. Let me get your name.

STUDENT: Lyle Algore.

(After the counselor completed arrangements for an interview the next day, he dismissed the student.)

During the interview, Counselor B did not want to run the risk of doing something that would jeopardize later relations with the student. Consequently he resorted to a delaying tactic of scheduling an interview at a later date. This gave the counselor time to gather more information about the student before entering upon a more intensive interview with him.

Counselor B attempted to determine the reason for the interview by asking the question, "Did she give you any reason for seeing me?" Had the student been eager to talk, this would have given him an opportunity to do so. Obviously, at this point sufficient rapport had not been established with Lyle. Although Counselor B arranged for an interview later, his approach appears to be cold and abrupt. With such an approach, it is little wonder that rapport was not established.

Approach of Counselor C. Still another opening approach was used by Counselor C in interviewing this same student, as follows:

COUNSELOR C (seated): What is your name?

STUDENT (standing): Lyle Algore. Miss Smith sent me down to see you.

COUNSELOR C: Evidently you have her this period. What's wrong? Any idea what she sent you down here for?

STUDENT: I don't know. I went to class and she said I had better see you today.

COUNSELOR C: In other words, as soon as you got into class, she told you to come down here?

STUDENT: Yes, sir.

COUNSELOR C: I will take care of arrangements with the teacher. In the meantime, fill out this blank.

STUDENT: I have already filled it out. I am always filling out blanks.

As this excerpt shows, Counselor C's opening was unsuccessful. Note that the counselor failed to show any friendliness toward the student; such friendliness might have been displayed through conversation, through offering a chair, or through other means. Rather, the counselor put the student on the defensive by asking, "What's wrong?" The counselor, moreover, never explained his remarks to the student. For example, what did the counselor mean when he said, "I will take care of arrangements with the teacher"? What did he mean when he told Lyle to "fill out this blank"? Lyle showed that he did not see the reason for the blank when he commented, "I am always filling out blanks." The remarks of both the counselor and the student clearly indicated that rapport was neither established nor being established.

RAPPORT MAY VARY IN LEVEL OR DEGREE

Rapport has been discussed under the heading, "Opening the Interview," but this should not give the impression that rapport is confined to this phase of the interview. Rather, rapport should permeate the entire interview.

In addition, it is necessary to point out another aspect of rapport which is frequently not recognized. This deals with the *level of rapport*. Counselors recognize that with some counselees they are able to establish excellent rapport, while with other counselees they have poor rapport. This judgment of "excel-

lent" or "poor" is made on the basis of such factors as the counselee's co-operation, the counselee's willingness to reveal information desired by the counselor, the counselor's generalized impressions of the counselee's attitude, and similar evidence more or less tangible.

A rating scale. In estimating the level or degree of rapport between the counselor and his counselee, the former can get some help from the five-point rating scale devised by Davis and Robinson.⁸ This scale is made up of steps which are as follows:

1. Counselee definitely resistive—rejects counselor point of view or manner of structuring interview in a somewhat belligerent manner, refuses to talk about a real problem, or attempts to close interview.
2. Counselee somewhat resistive—rejects counselor point of view or suggestion but in a polite manner, does not talk freely, or may show a tendency to contradict counselor.
3. Counselee apathetic—takes no initiative but accepts counselor suggestions, usually in a noncommittal fashion.
4. Counselor and counselee work together fairly well—talk together rather freely, although there may be some friendly parrying to advance points.
5. Counselor and counselee work together on a real problem—talk very freely, feeling of mutual respect is marked.

This five-point scale is a useful index of the degree of rapport. But using it or a similar scale for rating all of an interview can be misleading. Consider, for example, interviews with two students who are different in several important ways. The counselor interviews Jim for the purpose of finding out what his vocational objectives are. For Jim, this is a highly interesting topic, without strong emotional involvements. He willingly discusses his vocational choice with the counselor. Consequently, the counselor feels that he has fine rapport with Jim. The counselor also interviews George, who wants to be an artist. Both his parents, however, want him to be a chemist. They consider his art a waste of time. They ridicule his drawing and painting. They refuse to discuss the matter seriously with him. For these reasons, George is reluctant to talk about his voca-

⁸Stanley E. Davis and Francis P. Robinson, "A Study of the Use of Certain Techniques for Reducing Resistance During the Counseling Interview," *Educational and Psychological Measurement*, IX, Autumn, 1949, p. 299.

tional choice during the interview. As a result, the counselor feels that he has not established rapport with this youth.

In characterizing the foregoing cases, the counselor is likely to place Jim and George in "excellent" and "poor" categories, respectively. In one respect the counselor is right, for there is obviously an important difference between the degree of rapport established with these two youths. But in making his over-all judgment of rapport, the counselor should not overlook the fact that the degree of rapport with a given counselee may vary according to the material being discussed.

The alert counselor can observe differences in the level of rapport with a counselee. Ordinarily, these differences appear when various topics are being considered in the interview. For example, although Jim readily talks about his vocational choice, he might shut up like a clam if his sexual adjustment were touched upon. Even on a single topic, rapport may vary. At one time, rapport may seem to have been established; at another time, it may appear to be completely absent.

This level-of-rapport concept has two important implications for the interviewer. First, rapport may be established at one level but does not necessarily continue there. With attention, it may be raised to a higher level. Without attention, it may sink to a lower level. The interviewer, therefore, must be continually sensitive to the need for building rapport at various times throughout the interview as well as at its beginning.

Second, rapport may have to be raised before facts are given or received. Accordingly, the interviewer should not hesitate to take time out during an interview to establish a higher level of rapport when necessary to get the desired information. If the interviewer is sensitive to the interviewee's needs, he will recognize those times at which rapport must be re-established or lifted to a higher level.

Increasing rapport. A number of techniques which counselors use to "reduce resistance or increase rapport" have been identified by Davis and Robinson.⁴ Here is their description of these techniques:

Sympathy: The counselor sympathizes with the counselee, i.e., says or implies that he feels sorry for the counselee.

⁴*Ibid.*, pp. 301-302.

Assurance: The counselor encourages the counselee by saying or implying that the counselee's problem will be solved. The counselor's purpose in using this technique is to ease the counselee's fears.

Approval: The counselor expresses approval of or agreement with something that the counselee has said or done. The approval is usually, though not necessarily, intended to encourage the counselee.

Humor: The counselor attempts to ease the tension in the mind of the counselee by saying or implying something intended to make the counselee laugh. However, the mere fact that the counselee laughs following a statement by the counselor does not necessarily indicate that humor was intended by the counselor. Nor does the fact that the counselee does not laugh necessarily indicate that the counselor did not intend humor.

Objective Materials Used: The counselor makes use of some objective materials during the interview, such as notebook, textbook, chart, diagram, etc.

Counselor Makes Personal Reference: The counselor tells about some of his own experiences to illustrate his point, or refers to himself in such a way as to insert his own personality into the interview by saying, "I think," "I would do this," etc.

Illustration or Anecdote (non-personal): The counselor cites an example of the experience of another person or a statement made by another person to illustrate his point. This classification includes "telling a story." This is a non-personal reference.

Question Form: The counselor makes a tentative statement of fact or opinion, or interpretation of the counselee's previous statement or statements, in the form of a question, giving opportunity for the counselee to agree or disagree with the counselor. Mere asking for information is not included in this category. The counselor's purpose in asking the question may be to cause the counselee to think further about his problem.

Counselee's Words Used as a Springboard: The counselor follows the counselee's lead, repeating the counselee's statement and using it as the beginning of a new topic for discussion.

Threat: The counselor says or implies to the counselee that unpleasant results for the counselee are likely to occur if the counselee follows or fails to follow a certain specified course of action.

Experimental Findings Cited: The counselor cites some experimental evidence to illustrate or prove a point.

Expression of Surprise: The counselor expresses surprise or astonishment at something that the counselee says or does.

Irony: The counselor makes a statement which is apparently intended to convey the opposite meaning. Usually, but not necessarily, the irony is used in a derogatory sense.

Davis and Robinson found that counselors vary greatly in the frequencies with which they use these techniques. Most frequently used, in the order given, were: "Question Form," "Counselor Makes Personal Reference," "Approval," "Assurance," "Illustration or Anecdote (non-personal)," and "Humor."

The frequency with which each of the techniques was used, however, is not a guide to its relative merit. "Counselor Makes Personal Reference," "Assurance," and "Illustration or Anecdote (non-personal)," for example, were most typically used in low rapport situations. These techniques, however, were not always effective in increasing the level of rapport.

The study by Davis and Robinson throws considerable light on available techniques. It also supports the point of view that it takes more than "a bag of tricks" to establish and maintain rapport.

HERE ARE SUGGESTIONS ON THE BODY OF THE INTERVIEW

The body of the fact-finding interview is that phase in which the desired information is secured. In actual practice, however, the body of the interview frequently calls for rapport-building and the opening of the interview often yields desired information. The two phases, the interview's body and its opening, are closely entwined.

Although the same or similar principles are useful throughout the interview, certain of these principles have greatest application to the body of the interview. These principles are described next.

1. *Phrase questions to stimulate interviewee participation.* Only when the client participates in the interview will the full nature of his situation become apparent. Applying this principle, the interviewer should phrase questions and statements in a manner which encourages the interviewee to talk freely. If the interviewer's questions can be answered by "Yes" or "No," they may be answered in that manner; such answers obviously tend to stop discussion. For example, the interviewer

asks the question: "I see here that you want to be a doctor. Is that right?" The interviewee's answer is "Yes"; that answer ends the conversation until the interviewer asks another question. Suppose, instead, that the interviewer says: "Tell me a little bit about this plan of being a doctor." To this request, the interviewee is likely to talk about his plan, thus giving the interviewer the facts he wants.

The interviewer should carefully phrase all questions or statements which deal with problems about which the interviewee is sensitive. Such a question as, "Why is it that you don't like your sister?" tends to put the interviewee on the defensive. The interviewee might respond: "Oh, I like her all right." Or he might evade answering the question by declaring: "Who says I don't like her?" In this case, the interviewer might better have asked, "How do you and your sister get along?" or "What kind of girl is your sister?" These questions clearly avoid putting the interviewee on the spot. They also make it possible, if rapport is established, for the interviewer to obtain revealing answers without passing judgment on the fact that the boy dislikes his sister. Summed up, the point is just this: The interviewer should never ask questions which tend to make the client defensive or evasive.

If the interviewer phrases questions that stimulate the interviewee to talk, the interview will never take on the appearance of a cross-examination of a witness in his own defense.

What the interviewer should avoid in his remarks is illustrated in the following transcript of a portion of an interview. Note that the interviewer's questions are poorly phrased; note also that the interviewee's responses are short and noninformative.

The interview was held with Joseph, who was 16 years old and a first-generation American of Polish descent. He had been in school two months when his shop teacher, Mr. Crule, referred him to the counselor. This student was doing better than average work in shop, but he was close to failing in all other subjects.

COUNSELOR: Come in.

JOSEPH: I guess I should see you, sir. Mr. Crule sent me to talk to you.

COUNSELOR: Have a seat. Make yourself comfortable. Yes, Mr. Crule was talking to me. He has taken quite an interest in you. *You like shop?*

JOSEPH: Yes.

COUNSELOR: Mr. Crule said you weren't doing so well in your other subjects, Joseph. I thought I might be able to help you.

JOSEPH: I don't think there is much that can be done.

COUNSELOR: Don't feel that way, Joseph. *You need help, don't you?*

JOSEPH: I don't know.

COUNSELOR: Why don't you think there is much that can be done to help?

JOSEPH: I guess you would say it is my father.

COUNSELOR: Yes, Joseph.

JOSEPH: I would just as soon go away from home. I can't do things like the other fellows. I can't play baseball after school or go to the movies.

COUNSELOR: If you don't have time for things like that, how is your day spent?

JOSEPH: I have to get up at 5 o'clock, milk the cows; then I have to ride the bus to school. After school I have to milk the cows and clean the barn, and by that time I want to go to bed.

COUNSELOR: *Do you have time for your school work?*

JOSEPH: No.

2. *Avoid over-talking the interviewee.* As suggested earlier, one of the most frequent errors of the inexperienced interviewer is over-talking. Such an interviewer interrupts the client when the latter is in the middle of a sentence or when he is fumbling for words to use. This all too common mistake has been described by one of the authors thus: "You tend not to wait for the halting, awkward, badly phrased outpourings of the student. You tend to reach in and put words into his mouth and then take them out and say, 'I see what you mean.' Actually you phrase his sentences for him. He starts the sentence, he gets about a quarter of the way through it; you, in your infinite wisdom, see what he's going to say, say it, and then see how it will go from there. . . . That is a good way to keep the client

from participating very much. Remember, some of the things he's trying to get out are fundamentally difficult, emotionally toned ideas or content. He has to have time to do this."⁵

3. *Use silence constructively.* Closely related to the interviewer's error of over-talking is his inappropriate use of silence. Throughout American social life there appears to be a tremendous fear of silence. At a dinner party, for example, when all at the table are silent, somebody rushes in and fills the silence with chatter.

The fear of silence is often evident in interview situations. The interviewee is silent; he may be struggling with an idea. Or the interviewer is silent; he is thinking about the progress of the interview. To participants, silences may seem long indeed, but when clocked they are found to last usually between 15 and 45 seconds.

To some interviewers, silences are very disturbing. But in reality, they are features of a good interview.⁶ Silences give the interviewer an opportunity to sample, feel, look over, think through what has happened in the interview. They also give the counselor an opportunity to catch up with what is going on.

4. *Limit the information sought in one interview.* The interviewer should not attempt to get the student to "tell all" in one short interview. This point is particularly important when dealing with an interviewee who has emotional or personal adjustment problems. The fact is fairly well established that the interviewee who has talked at length about emotional or personal problems may develop feelings of guilt afterward and may be ashamed to return for further assistance.

In the portion of the interview transcribed next, note that during the conference the counselor endeavors to obtain too much information from a student about his emotional problem. After the counselor is finally rebuffed by the student, he very wisely if somewhat tardily changed the topic of conversation. This change, of course, limited the amount of emotionally-

⁵John G. Darley, "Techniques of Interviewing," *Counseling Workshop, Summer, 1949, General Lectures* (Chico, California: Chico State College, 1949), pp. 165-166.

⁶Ralph H. Tindall and Francis P. Robinson, "The Use of Silence as a Technique in Counseling," *Journal of Clinical Psychology*, III (1947), pp. 136-141.

charged information the student was able to reveal during the interview.

Isaac was interviewed because of an outburst of shouting in class. In his academic work, he was about average. He read extensively. He was interviewed by his class counselor, who also has had him in one class. The interview, held after school, went as follows:

COUNSELOR: Isaac, I suppose you know why I asked you to come to see me?

ISAAC: Yes, sir, I was yelling.

COUNSELOR: What was the reason for this outburst?

ISAAC: Today is my lucky day. When I get home today, my mother promised to have a bicycle for me.

COUNSELOR: Is that a good reason for shouting?

ISAAC: No, sir, but when I do something like that at least somebody knows I'm around.

COUNSELOR: Do you mean no one pays any attention to you either here or at home? I know you are here, and try to give you help when you need it.

ISAAC: Yeah, but hardly anybody does and at home my brother does his homework all the time.

COUNSELOR: What about your parents?

ISAAC: They don't even care if I'm around sometimes.

COUNSELOR: How about telling me something about your home? Maybe there is a reason for this.

ISAAC: O.K., but it won't help; they don't care.

COUNSELOR: How many children are there at home?

ISAAC: Only two, but I have another brother and two sisters.

COUNSELOR: Are they married?

ISAAC: No, they are adopted—see, I live with my father and stepmother now.

COUNSELOR: I gather that you didn't always live with them, so start when you lived with your whole family.

ISAAC: Well, we lived in My father went to war and after a while my mother sent two of us to a home. The other three stayed with her. If they had come with us, we'd still all be together. She didn't have to give them away if she didn't want to.

COUNSELOR: Who is "she"?

ISAAC: My real mother.

COUNSELOR: Did your father know about this?

ISAAC: I don't know, but she didn't have to do it. They could have come with us. My father wouldn't have done it.

COUNSELOR: Then what happened?

ISAAC: Well, he came home from the war and got us, and brought us up here. In a couple of years he married my stepmother.

COUNSELOR: When did your father and your real mother get a divorce?

ISAAC: I don't know, but they did.

COUNSELOR: Are you happy at home now?

ISAAC: Sure, I guess so. I guess I'm the bad one; every family has one. They don't like me too much, but they treat me O.K.

COUNSELOR: Do you ever see your real mother?

ISAAC: Sometimes I sneak over there, but if my father finds out, he beats the hell out of me.

COUNSELOR: Do you know why he doesn't want you to see her?

ISAAC: No, sir, but I don't understand. Both of them tell me different stories, and I don't know which one is right. Which one do you think is right?

COUNSELOR: I'm not in a position to say, Isaac. I don't know what you are told, or which is true if I did know. Do you want to tell me what the stories are?

ISAAC: No! I don't like what he says. I don't think it's nice and I don't believe him, and I don't tell anybody or anything or anybody.

(At this point Isaac became very excited; the counselor reported that he realized that he had opened up a deeply personal problem. He then broke sharply away from the line of questioning he had been following.)

COUNSELOR: Let's leave this for a moment, Isaac. What kind of a bicycle do you expect to have when you get home?

5. *Accept the interviewee's attitudes and feelings.* At various points in the interview, the interviewee may be trying to express the more deep-seated attitudes and feelings which control his behavior. When he does so, he may bog down in the

effort simply because, like other humans, he finds it difficult to put into words some of his more private attitudes, resentments, doubts, and uncertainties. He may also fear that the interviewer will not approve of what he says. For these reasons, the interviewer must indicate to the interviewee that he has accepted but not passed judgment on these feelings and attitudes. This indication may be implied by merely saying, "I see," or "I understand," or "Yes." Such a comment may also serve to bridge the conversational gap and to keep the interviewee talking. Illustrations of how the interviewer accepted the interviewee's statements without indicating censure or approval appear in many of the interview excerpts reproduced in this chapter.

6. *Keep control of the interview.* A fact-finding interview differs from a counseling interview in many respects. One of the most important differences is the amount of control which the interviewer exercises. In the fact-finding interview, definite and frequently predetermined kinds of information are sought. The interviewer must, therefore, maintain control; otherwise the client may not reveal the desired information.

The experienced and skilled counselor recognizes, however, that he does not need to plan each step in the fact-finding interview ahead of time. He knows that if he does so the student may upset the plan by going off on a topic of his own interest. All too frequently, the beginning counselor is "talked out of" his own best judgment by a student who has the knack of getting his adviser rattled or off the subject.

Keeping control of the interview, in short, means that the counselor lets the student roam a bit in his conversation, but eventually pulls him back by using a transition sentence or a direct question. The competent counselor does this without interrupting the free flow of expression of the interviewee's attitudes. To get the interview back on the main track, the counselor can make remarks like, "We were talking about—," "What was it you said about—?" or "How does this fit in with what you said earlier?"

How a counselor skillfully redirects the course of conversation during a conference is demonstrated in the following transcribed portion of an interview. The interviewer's statements which change the line of the discussion are italicized. The

interview was held with a freshman girl who displayed many nervous mannerisms. The interviewer was attempting to discover incidents in the girl's life which might have a bearing on her present nervousness.

INTERVIEWER: Hello, Gwen. Bet you have been busy getting ready for mid-terms.

GWEN: Oh, you know, the usual last minute studying.

INTERVIEWER: Won't you take this comfortable chair?

GWEN: Thanks.

INTERVIEWER: We've talked before about things in general.

Today I wonder if you would sketch a brief history of yourself.

GWEN: Well, I'll try. I was born January 12, , which makes me 19 at present. Of course, you know my parents are both native-born Americans, and my whole family belongs to the Methodist church. I have no brothers or sisters; I suppose that is because my mother died so young. My father never remarried. I started to school at six.

INTERVIEWER: Tell me something of your earliest years.

GWEN: I can't remember much except that my father was interested in radio and used to listen to programs from abroad. I lived with my mother and father from the time I was born until she died. I was seven at the time. I remember coming home from school with a girl friend. We used to race from our respective gates to our kitchen doors to see who would win. I can remember that day in particular. I cried out, "I beat, I beat." The kitchen shades were drawn and lots of people were sitting in the kitchen. My father was crying. My aunt said: "Gwen, come in and see your mother. She is just asleep." But I knew she was dead. I was really broken up; we all were so close. (Long pause.)

INTERVIEWER: Did your mother's death affect your living arrangements?

GWEN: At first father and I continued to live in our house on Avenue. I was going to Private School and liked it so well father was reluctant to move. After a year we moved into an apartment. Because father worked all day, after school I sometimes went to my father's brother's house which was around the corner. We lived

there till I was eight years old. Then we moved to my grandmother's. At my grandmother's there were all adults. I was the only child. I have always been the only child. There were my grandparents, my father, and myself. We lived there until I was 12 years old and in the seventh grade.

INTERVIEWER: You mentioned going to _____ *Private School?*

GWEN: Yes, _____ Private was a good start. I did very well in the first and second grades. I was the leader of the group. I can remember one incident that stands out perfectly. I was in the second grade and was chosen to read to the first-graders. During recess I fell in the school yard and cut my knee. It upset me. I was conscious of the kids looking at my bloody knee when I was reading to them. It affected my reading considerably. I was always interested in leadership. In the sixth grade we had a young teacher. She taught us all about world affairs. We knew more about them than most grownups. We put on a program on democracy. I wrote an article which was put in the paper, but no name was attached. I was terribly disappointed.

INTERVIEWER: Were there any subjects or teachers you didn't like?

GWEN (laughing): I never liked arithmetic; still don't. I loved history. (Laughing again.) I loved my teachers; I used to stay after school to talk to them and wash boards. You know, the usual things kids do. My grandmother used to get after me because I stayed so late. I got good marks.

INTERVIEWER: Did you ever feel the other children resented your getting good grades?

GWEN: No, I do not think we thought much about it. I always got along well with other children. We moved when I was in the eighth grade. Father had bought a house on _____ Avenue and hired a housekeeper, so I could go to Junior High. I thought it was such a pretty school. I could have gone to _____, but I wanted to go to Junior High; so father let me. I went there during the eighth and ninth grades. I had a good time.

INTERVIEWER: *Could you tell me, if we may go back a little, something about the effect your mother's death had upon you?*

GWEN: Yes, I thought it was a bit hard to explain. She was taken ill on December 4th, and died in March. It was something the matter with her lungs; I don't know exactly. She was only 32 years old and father was 31. I was told she was asleep; I knew she was dead. I couldn't cry. I became so nervous father sent me to the country to stay with friends for two weeks. There were pigs and things; it was a farm. It was a new experience for me.

INTERVIEWER: *Do you think your mother's death affected you in any way that may still be apparent now?*

GWEN: Yes, I am always nervous.

INTERVIEWER: How do you mean, nervous?

GWEN: Well, when I was small I used to have nightmares. They were horrible. I'd wake up screaming and run in to father. I always slept by myself. Even now my hands quiver at times. I often have a hard time getting to sleep, but once asleep I don't wake easily. Now I dream occasionally, though it is about something that happened, a fact, confused, distorted.

INTERVIEWER: How do you feel when you hear of one of your friend's parents who has died?

GWEN: I think of how lonely they will be.

INTERVIEWER: Would you say you had experienced any home conflict?

GWEN: Well, yes. I was the only young person. The others were all older. I told you about staying after school. There were always so many people; I had a hard time finding a quiet place to study. Of course, I realized they all spoiled me. I got everything I wanted. I don't suppose that was too good. I never had to help around the house. My father was always my best friend. He is only 25 years older. But he always taught me to be independent. That is one of my most prominent characteristics today. My father and I always agree on things.

INTERVIEWER: *Gwen, did you ever have any prolonged childhood illnesses?*

GWEN: No, not serious ones. I had the usual measles, chicken pox, whooping cough when I was, oh, about six or seven. I had my tonsils out at four years. They never grew back. I never feared the doctor. I used to have terrible colds. In fact, I had to take shots for them. But our doctor reminded me of Santa Claus. He played the piano. I never minded him giving me the cold needles. Oh, I forgot to tell you—I changed from Private School to Public School. I went there from the third to seventh grade. It was there that the teacher taught us about democracy. I also found poetry interesting. Outside of that, there is little to say about those years.

INTERVIEWER: You got along well in school, never failed?

GWEN: No, I never failed. I liked school.

INTERVIEWER: Did you like Junior High School?

GWEN: Well, it was all right. I guess you might say the eighth grade was "just something that happened." There was no confusion, plenty of homework.

As given in this section, the six principles of interviewing technique and the examples illustrating them should serve as guideposts to persons conducting fact-finding interviews. References could have been cited which list as many as 25 to 75 rules for interviewers. In the main, these rules are mechanical in nature. Furthermore, one or more of these rules may be quite unsuitable for interviewing a particular student. The good interviewer is not one who goes only by the rule. Rather he is a flexible individual who, because of his understanding of the dynamics of human behavior and of interviewing, selects those procedures which are most appropriate for each interview.

FINDING AND USING LEADS DEVELOPS UNDERSTANDING

The good interviewer not only pays a good deal of attention to the facts which the interviewee discusses, but also is alert to nonverbal clues. Grimaces, blushing, fidgeting, and long pauses—these are but a few of the nonverbal signs which tell the interviewer something about the interviewee.

Frequently as important as *what* the interviewee says is *how* he says it. This point is emphasized by Garrett, in her monograph, *Interviewing: Its Principles and Methods*,⁷ and particularly in the chapter entitled, "Things to Look for in Interviewing." This chapter is summarized briefly here.

According to Garrett, *the association of ideas* is a phenomenon well known to counselors as well as to many non-professional persons. This phenomenon operates both in the interviewer and the interviewee. The interviewer must be on guard lest he confuse his own association of ideas with those of his interviewee. For example, when the interviewee mentions grandmother, Thanksgiving, or a certain book, a stream of associations may be started in the interviewer's mind. This stream of ideas may be quite unrelated to the interviewee's problem or his feelings about it.

Unless the interviewer is on guard against his own association of ideas, he may assign certain feelings to the interviewee which are his, not the interviewee's. The interviewer may, for example, recall his own unpleasant memories of algebra classes and may even become annoyed or distressed when the interviewee begins discussing algebra. Unless the interviewer avoids projecting his own ideas associated with algebra, he is in danger of misinterpreting the ideas expressed by the interviewee.

By being sensitive to the interviewee's association of ideas, the skillful interviewer can get many helpful clues. The student may be discussing his failure in history, and may then point out the similarities between his history teacher and his hated step-mother. The interviewer can easily see the interviewee's confusion of the role played by each of these two persons in his life. For instance, in the middle of her description of a pleasant summer vacation away from her family, the freshman girl may indicate a desire to have a "vacation" from the regimented study hall.

At times, the interviewee will *shift the conversation* from one topic to another with little apparent reason. But study of what he said before the shift and what he said after it sometimes reveals the reason. In discussing the previous topic, he

⁷Annette Garrett, *Interviewing: Its Principles and Methods* (New York: Family Welfare Association of America, 1942), p. 123.

may have felt that he was telling too much. Or, he may have felt that the topic was too painful to talk about further, or that it was too personal—or too damaging in character. What appears to be a shift in conversation may in reality be a continuation; in the life of the interviewee, both topics may have a close relationship. Helen, for example, may shift from a discussion of social dancing to driving the family car. To the interviewer these are seemingly unrelated topics, but to Helen they are closely related because her mother forbids her to do either one.

Some transcripts of fact-finding interviews reveal that one or two themes dominated each interview. This theme may be relatively open and specific. It is brought out by the interviewee's *recurrent reference* to such matters as his difficulty in passing Latin, dislike for physical education, or inability to get a part-time job. Again this theme may be relatively concealed and general, as in the case of the student who "resents authority." He may never say these words or imply them; yet he may manifest this resentment indirectly by complaining of the unfairness of his teachers, of the unreasonableness of his parents' rules, of the partiality of his scoutmaster, or of the snobbishness of the officers in his classroom.

Much like this single-theme situation is the "*talks in a circle*" situation. The interviewee who displays this trait is often co-operative enough—he talks freely; he appears to have rapport with the interviewer. But he does not move forward. To illustrate, consider a senior student who talks freely about his inability to make friends while he was in junior high school. But he does not mention how he is getting along in making friends now that he is a senior. Although the interviewer explains that he understands the situation in junior high school, the student continues to describe it. When the interviewer recognizes that such a student is circling, he should attempt to insert something new into the circle, thus changing it to a spiral. Often the interviewer accomplishes this by asking a well-phrased question which causes the student to move into new and profitable areas of discussion.

Nearly every fact-finding interview has *gaps*. An interviewee rarely tells a complete story of his life. Even if he wanted to do so, few counselors would have time to hear it. These gaps

are not exceptional; they are to be expected. A student may tell a straightforward story with unexpected gaps. A boy, for instance, may relate that he withdrew from chemistry after his third week in the course, but he may fail to give the reason for doing so. Or, a girl may tell about her failure to secure a part in the class play, without revealing that after that failure she wanted to leave school. A few such unexpected gaps may only suggest a possible explanation. But if many gaps follow the same pattern, they may suggest a probable rather than only a possible explanation. In like manner, the interviewer may pay little attention to a single inconsistency in a student's story. But if the interviewer notes many inconsistencies and if these inconsistencies tend to fit into a pattern, this pattern may be significant.

At all times the interviewer must be alert to recognize the *concealed meaning*. He must, as Garrett says, "accustom himself to what his client means as well as to what he says." At times the meaning is obvious. This is true of the boy who is failing in his classes, who wants to drop out of school, and who honestly declares: "Marks don't make any difference to me. I would want to leave school even if I had a straight-A average." More often than not, however, the meaning of what the student says is concealed. In such a case, the interviewer can detect the real meaning only by carefully observing slips of the tongue, mannerisms, or other nonverbal clues.

Some counselees conceal their requests for help. A boy may say: "I don't know whether it's choosing a suitable occupation or something else you can help me with." He may be thinking: "Perhaps I can get help in making new friends at school." In such cases, it is usually wise to follow up the occupational choice problem first, and then deal with the "something else."

It is important that counselors recognize that students may or may not be aware of their use of psychological devices. These devices operate at both the conscious and unconscious levels. The high-school boy who is worried about a problem of sexual adjustment may be afraid to talk with a counselor about this worry. He may decide to "try out" the counselor by presenting the more socially-acceptable problem of vocational indecision. Then, if the counselor seems like an understanding person, the

boy may decide it is possible to discuss his sex problem in an interview. If he decides against doing so, nothing is lost. This is an example of conscious concealment.

Consider next an example of a student who is not aware of his own motivation. Like the boy described earlier, this boy states that his reason for coming to the counselor is to resolve his vocational indecision. He phrases his problem thus: "I'm all up in the air. I don't know what I want to do. If I knew what I wanted to do, then I guess other things would work out for me." The counselor discovers that the "other things" are not definitely a part of the boy's conscious stream of thought. The boy, he finds, has had periods of tension which were marked by vague feelings of restlessness and by specific feelings of unhappiness. Yet the boy seems unable to verbalize these feelings directly. Neither is he able to identify their causes by considering past events. A number of counseling hours passed before this boy secured enough insight to bring these "other things" to the conscious level.

HERE ARE SUGGESTIONS ON CLOSING THE INTERVIEW

The closing is often a difficult part of an interview. This difficulty has been described thus:

You have, of course, been out playing bridge with your friends. And as you get ready to leave, you stand on one foot and then the other foot, thanking everyone for a pleasant evening. That goes on and on. Have you ever been caught in a position where you can't get out the door? That quite often happens at the end of an interview. A lot of interviews are lost by a bad ending. The tension of the interview situation is relaxed. Both participants start to be very friendly—the mood, the rapport, the relationship is fractured by that easy and literally awkward familiarity at the end of the interview.⁸

The avoidance of an awkward ending, however, is only one of the reasons for considering carefully the close of an interview. Earlier, this chapter pointed out that this phase of the interview has one of two purposes—to end the present interview in a manner which gives the interviewee a feeling of satisfaction,

⁸Darley, *op. cit.*, pp. 164-165.

or to suspend the present interview so that a minimum of time will be needed to open the next interview. These two purposes are now examined in greater detail.

Why should the interviewee feel satisfied at the end of a fact-finding interview? Because satisfied counselees make for good public relations? Yes, but there are other reasons, too. These reasons take into account the mental health aspects of the interview. In the life of the typical person, it is an uncommon occurrence to be interviewed about himself. Naturally, some tension is generated during the interview. If he reveals facts which are emotionally charged, additional tension or anxiety may result. It is quite clear, therefore, that, as the interview progresses, the counselee becomes more involved in the process. This involvement is highly desirable, but it complicates the task of closing the interview. An example may help clarify the point.

During an interview concerning his failure in algebra, a high-school freshman discussed several reasons for his failure; most of these reasons appeared to be superficial. As the half-hour allotted for the interview drew to a close, the student blurted out: "Why do I have to study algebra anyway? I don't see any sense to it, but Dad makes me. He's always doing things to make it hard for me. I hate him! I hate him!" And with that off his chest, the boy began to cry. The counselor had at least two possible choices of action. He could extend the allotted time to build a satisfactory close. Or he could end the interview at the scheduled time. He selected the latter choice, saying: "Well, that's all for today." When the counselor came to school the next morning, the boy was in the office waiting for him. The boy, obviously very tense, pleaded with the counselor not to tell anyone what he had said about his father. Even though the counselor assured him that the information would be kept confidential, the boy was very evasive when the counselor in subsequent interviews attempted to reopen the discussion of the boy's feeling for his father.

Because this interview was not properly closed, subsequent interviews were handicapped. It would have been much better if the interviewer had closed the first interview in a manner which recognized the deep feelings expressed by the boy and

which gave the boy a sense of satisfaction in having gotten them off his chest.

This should not be interpreted to mean that each interview must be continued until the client feels ready to terminate the session. Such a procedure is not practical. The interviewer must maintain a schedule of appointments; hence he must frequently take the initiative in closing an interview. If the counselor senses that it is necessary to continue the discussion in another interview, he should attempt to "suspend" rather than to "end" the conversation. Instead of saying, "Well, that's all the time we have today. Is it convenient for you to have another interview a week from today?" the counselor might better say, "Well, the time for today is gone, so I guess we'll have to leave this discussion up in the air. But, if convenient for you, we can continue it a week from today." The difference between these closing phrases may appear slight, but it is really significant because the second closing tends to suspend the conversation instead of terminating it.

In closing, some interviewers have found it helpful to raise questions for the interviewee to think about before the next interview. For example, suppose that while the client is discussing the origin of his vocational plan, the time is about to run out. His interviewer might suggest: "We won't have time to finish this discussion today. But we can continue it at our next meeting. In the meantime, perhaps you will want to think about a few questions. What, for example, are your reasons for not wanting to go into the occupation your father suggests? Or you might consider the kind of occupation you'd really like, if you didn't have to worry about finances." Such questions tend not only to suspend the interview but also to provide suitable leads for resuming conversation in a subsequent interview.

This discussion of closing the interview is not complete without some reference to techniques of summarizing the interview. Certain writers have suggested that the interviewer do the summarizing; others, that the interviewee be asked to summarize. The summarizing procedure probably has little value in a fact-finding interview. If the interviewer summarizes, he may not have assimilated the information well enough to make a good summary. His summary of the interview, moreover, may

tend to highlight certain information that the interviewee may have in mind but may not consider significant. If the interviewee is asked to summarize, he may be in a very difficult spot. He may resent being asked, in a sense, to repeat what he has already said. In short, summarization by either the interviewer or interviewee is not highly essential to the closing of a fact-finding interview.

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*Self-Report Documents:
The Student Record Form*

THE VALUE of self-report documents as aids in understanding individuals has long been recognized. With reference to them, Cronbach states: "Self-report techniques have a long history. Medicine has long used the patient's report of his symptoms for diagnosis and evaluation of treatment. In psychology, almost the entire development of modern hypotheses about personality hinges on self-report. Freud, for example, based his findings and theories almost wholly on interviews, reports of dreams, and other introspective data."¹

The fact-finding interview is in one sense a self-report technique. Many generalizations concerning the interpretation of data obtained by the use of an interview apply with equal force to the analysis of the self-report documents described in this chapter. The principal difference between the interview and the self-report document is that the former is conducted orally with another person, while the latter is written individually without the interplay of two personalities. This difference so influences the results, however, that the two techniques can properly be called complementary rather than alternative techniques. Each can be used to supplement or verify the information obtained by the other.

Some authors consider certain types of tests as self-report documents. For example, Strang,² Rothney and Roens,³ and

¹Lee J. Cronbach, *Essentials of Psychological Testing* (New York: Harper and Brothers, 1949), p. 313.

Cronbach⁴ classify personality questionnaires as self-report documents. They are justified in doing so because these tests are essentially written reports of the student's introspection. At times, interest tests, attitude scales, and similar more or less standardized tests are classified as self-report documents.

WHAT ARE THE FEATURES OF A SELF-REPORT DOCUMENT?

Under the heading of "self-report documents," the authors will discuss only the less formal and less standardized materials and procedures—those which do not include a quantitative means of scoring and interpretation.

In this kind of self-report, important questions of validity, reliability, and usefulness must be considered first. How valid, for example, is the information secured by means of a personal data blank? How reliable are the facts found in an autobiography? How useful is the evidence appearing in these self-report documents? Answers to such questions, unfortunately, are difficult to find in professional literature because so few research studies have been reported in this particular field.

Perhaps the most comprehensive work dealing with the self-report is that of Allport. He has presented his research in a bulletin entitled *The Use of Personal Documents in Psychological Science*.⁵ His findings and those of others lead to two important conclusions: First, self-report documents have reasonably satisfactory levels of validity, reliability, and use, especially if the students' responses are given careful consideration. Second, students will consistently and accurately report facts concerning themselves if conditions are favorable. The nature of these conditions will be discussed later.

In considering self-report documents, the crucial question is not always the validity and reliability of the facts reported

⁴Ruth Strang, *Counseling Technics in College and Secondary School* (New York: Harper and Brothers, 1949), Chapter IV.

⁵John W. M. Rothney and Bert A. Roens, *Counseling the Individual Student* (New York: William Sloane Associates, Inc.), Chapter III.

⁶Lee J. Cronbach, *op. cit.*, Chapter XIV.

⁷Gordon W. Allport, *The Use of Personal Documents in Psychological Science* (Bulletin 49, New York: Social Science Research Council, 1942), p. 210.

by the student. His reports may contain distortions and inaccuracies, yet these may reveal as much concerning him as the information which he reports accurately. Whether self-reports are accurate or not, the counselor faces the prime problem of making valid interpretations of the data within these reports. The more skillful he is in the application of interpretive techniques, the more valid, reliable, and useful his interpretations are.

As just implied, self-report documents make heavy demands upon the interpreter's competence. This point can be clarified by contrasting the skill required to interpret a test score with that necessary to interpret a self-report document.

The counselor, for example, gives a spelling achievement test to a student. He then compares the student's score with scores made by others who have taken the test. In interpreting this student's score, the counselor needs to have only a modicum of skill, mainly because the student's performance can be quantitatively measured and compared with the performance of others like him. Thus, the counselor might say, "Your score of 23 on the spelling test means that you did as well as or better than 60 percent of the boys in your grade."

Now consider the situation in which a counselor is reading a student's autobiography. He discovers a number of comments indicating that the student dislikes school. On the basis of this finding, what judgment can he make concerning the student's attitudes toward school? Since standards or norms are not available to indicate the number of "anti-school" comments to be expected in an autobiography, the counselor must rely upon his personal knowledge of the attitudes of students. On the one hand, he might conclude that the attitudes expressed are similar to those of other students or that the student has been treated in a manner which would be expected to produce such attitudes. On the other hand, he might conclude that the attitudes expressed are without justification and indicate a need for helping the student to reconsider his attitudes toward school. In both the spelling test and the autobiography cited, the validity of the interpretation rested in part upon the interpreter's skill. In the latter, however, a higher level of skill was required.

Some persons criticize self-report procedures on the ground that they yield data that are insufficiently valid. Therefore, they recommend certain personality tests whose validity has been established. But consider an investigation which revealed a significant difference between the average scores for different tested traits of a group of "adjusted" students and a group of "maladjusted" students. In validating the test, the test-maker and those assisting him had to use their observational and interpretive skills to divide the students into the two groups. Also, some students who made identical scores had been classified as belonging to different groups. The real value of a personality test in understanding an individual student is *not* the usefulness of the obtained score for cataloging that student. Rather, it is the insight which the counselor gains when he interprets this score along with other items of information, many of which are obtained from self-report documents.

In the foregoing statements, the authors definitely do not wish to build a case against the use of quantitative measures of personality or interest. However, they do wish to point out that the usefulness of all such devices and techniques for understanding the individual rests upon the counselor.

WHY IS THE STUDENT RECORD FORM SO VALUABLE?

Although the fact-finding interview is a widely used means of obtaining information from individuals, other techniques are frequently used for the purpose. Among these "other techniques" is the student data blank. This type of blank is known by a variety of names, the more common ones being "student record form," "personal data blank," "individual record form," and "pupil questionnaire." The blanks used in various schools may differ in certain respects, but they all conform more or less to a single pattern.

Why are student data blanks used? There are several major reasons. Student data blanks save time for the professional staff of the school. Students can complete the blank with little if any supervision. Consequently, the staff is not involved as it is in the fact-finding interview. Using student data blanks, in terms of staff time, therefore, is one of the most economical methods of collecting information about students.

These blanks effect other important economies. Consider a counselor who deals with a large number of students. If he obtains some prior knowledge of a student from a record form, he can plan to use his interviewing time more efficiently. In preparation for an interview, the counselor can quickly scan the student's filled-in form. If he is sensitive to the dynamics of human behavior, this scanning process will yield valuable clues to be followed up in the interview. Using these clues, the counselor can use a rifle-like rather than a shotgun-like approach to his counselee's problems.

Some schools include student data blanks in their registration procedure. Others make the completion of data blanks a part of homeroom activities. Regardless of which of these plans is followed, most schools using this type of form require *all* students to fill out copies of it. And there is a sound reason for doing this. Hardly a day goes by in which detailed information concerning some student is not desired. Frequently the problem which creates the need also militates against getting the wanted information. In order to help a boy adjust to a new and disturbing home situation, for instance, the counselor may need to know about the boy's family background. Perhaps the counselor has read in a newspaper that the boy's parents have recently been divorced. But the boy's unhappy home situation makes it difficult to talk with him about his parents. If the counselor has a previously-completed personal data blank in his files, he may be able to obtain the information relative to the family situation without embarrassment to the boy. Thus, the data blank is both a necessary and convenient means of collecting personal information for that day when it may be so urgently needed.

In some schools, student data blanks are used to supplement cumulative records. The latter type of record usually contains detailed information, but that information is relatively expensive to maintain. The cumulative record, moreover, provides data that are comparatively stable and that have more or less enduring significance. The personal data blank is inexpensive of staff time. It supplies information that tends to be more transitory and detailed than that found in the cumulative record form.

Another important difference between the cumulative record and the student data blank must be recognized. The former presents a longitudinal record of the student—that is, the information is accumulated over a period of years. Thus, this type of record presents a developmental picture of the student. The data blank provides a cross-sectional view of the student. True, it reports certain past events, but these events are reported as they were viewed in retrospect by the student. All of the information in a data blank is usually recorded in a single hour by one individual—the student himself. Because of this difference, the student data blank supplements the cumulative record but it can never replace it.

HOW CAN THE SCHOOL OBTAIN A STUDENT RECORD FORM?

Some schools and other guidance agencies purchase the student record forms which are available from commercial publishers. Among the best of such published forms are the *Personal Data Blank*⁶ and *The Aids to Self-Analysis and Vocational Planning Inventory*.⁷

Other schools construct their own student record forms because they believe that a local form best fits their needs. An interesting example of such a personal data blank was prepared by the Michigan State Board of Control for Vocational Education.⁸ This blank has a section designed for a school serving students from rural areas. The questions in this section are reproduced here.

E. Miscellaneous information for those who live on farms.

1. Where do you prefer to live after you leave school?
 a. Farm..... b. Town..... c. City.....
2. Years on the farm: From 19 to 19
3. Size of farm: Acres rented Acres owned
4. Principal crops grown and acres of each:
 a. Corn Acres... ..; b. Acres ...
 c. Acres; d. Acres ...

⁶Gustav J. White, *Personal Data Blank* (Stanford, California: Stanford University Press, 1938), 8 pp.

⁷H. D. Richardson, *The Aids to Self-Analysis and Vocational Planning Inventory* (Chicago: Science Research Associates, 1940), 8 pp.

⁸*Manual for Counseling*, Official Misc. No. 2059 (Lansing, Michigan: The State Board of Control for Vocational Education, 1941), p. 6.

5. Number and breed of livestock

Cattle: breed	number
Horses: breed	number
Hogs: breed	number
Sheep: breed	number
Poultry: breed	number

6. Machinery owned:

Tractor.....	Truck.....	Combine.....	Corn binder.....
Milking machine.....	Hay baler.....		

7. What crops have you owned and raised by yourself?

(Kind and acres)	acres;	acres. With your father:.....	acres;	acres.
------------------------	--------------	-------------------------------	--------------	--------

8. What livestock have you owned and raised by yourself?

(Kind and number);;
-------------------------	--------------	--------------

.....
With your father?.....;

9. What do you like most about farm life?.....

10. What do you like least about farm life?.....

11. If you could see the possibility of owning a farm sometime, would you want to stay on the farm? Yes No.....

The foregoing questions illustrate one of many ways in which a personal data blank can be adapted to the setting in which it is used. If a blank is planned for use in a school that has a rather complete cumulative record, naturally the data blank should be designed as a supplementary record. If the school has no cumulative record, the data blank should be much more detailed. In either case, it should contain only information which can be used. For example, if a given school has no plans or means for assisting students to find part-time employment or to place school-leavers in jobs, there is little value in using the data blank for gathering employment preferences and similar information.

Another reason for making a local data blank is to adapt the blank to the type of persons who are to fill it out. In preparing a blank for seventh-grade students it must be remembered that they require questions stated in simpler words than those appearing in a blank for college freshmen. Moreover, in such a blank more detailed questions about events in elementary school can be included—events that high-school seniors could not and need not recall.

It is interesting to note that locally-designed data blanks tend to include many items from other such blanks. Counselors who prepared their own blanks apparently obtained numerous items from the blanks others had constructed. Undoubtedly these counselors followed a sound practice—that of inspecting a large number of blanks before attempting to design blanks for their own particular schools.

WHAT ITEMS DOES A LOCALLY-PREPARED FORM HAVE?

An example of a personal data blank which includes items from other such blanks is the *Student Record Form* which appears in Figure 14.⁹ This form has been successfully used in Grade 8 through Grade 12.

An examination of this blank will reveal that the items are arranged in sections. This makes it easier for the student to complete the blank; it also aids the counselor in interpreting the filled-in blank. The items within a section, it will be noted, deal with closely-related information.

The cover page (Figure 14), has one major purpose—to obtain satisfactory student co-operation in completing the blank. When the blank is being given to a group of students, the administrator should explain orally the blank's purpose. He should also point out that any and all information revealed by the student will be kept confidential. If the blank is given individually to a student, the counselor can well postpone its administration until a reasonable degree of rapport is established. Such rapport helps assure that the student's answers are both accurate and complete.

The first section on page 1 of the Student Record Form (Figure 14) has items that call for identification information. Such data are necessary but have limited guidance value. In some states and communities, questions dealing with race and religion cannot be asked because they are barred by law. Therefore, schools should investigate the legality of requesting such information as well as the community traditions pertaining to such requests.

⁹The discussion of this form is based in part upon a mimeographed circular prepared by one of the authors when he was State Supervisor of Guidance Services in North Dakota.

STATE OF NORTH DAKOTA
OFFICE OF STATE SUPERVISOR
OCCUPATIONAL INFORMATION AND GUIDANCE SERVICE
315 North Thirteenth Street
Fargo, North Dakota

STUDENT RECORD FORM

(Cover Page)

Name of Student

Name of High School

Address

TO THE STUDENT:

The purpose of this blank is to bring together all essential information about you, so that our interviews with you can be given over completely to a discussion of your specific education needs. The information that we ask you to give in the following pages is a very necessary addition to our records of your school work. *These forms are for our confidential use only*, so please answer all the questions frankly.

(All or part of this form may be reproduced without charge by schools in North Dakota, upon application to the State Supervisor of Occupational Information and Guidance.)

STUDENT RECORD FORM

(Page 1)

Name Date Sex

Please Print

Present Address Counselor.....

Home Address Phone.....

Age..... Date of Birth..... Place of Birth.....

Race..... Nationality..... Religious Preference

Check any of the following which are applicable:

Father living: Yes..... Parents living together..... Parents divorced

No..... Parents separated Father re-married

Mother living: Yes..... Mother re-married

No.....

Father's name (and initial)..... Father's Age.....

Father's address (residence).....

Address of firm or employer

Name of Firm or Employer

Father's specific title, position, or work.....

If father unemployed, give usual occupation.....

Mother's present occupation.....

Mother's occupation before marriage.....

Father's birthplace..... Mother's birthplace

Father's and Mother's Education:

A. Indicate below the highest grade reached in school. If they finished the 6th grade, but no more, indicate Grade 6. If they finished two years of high school, indicate High School. Use a cross for father's education and a circle for mother's.

Grade School	1	2	3	4	5	6	7	8
High School	1	2	3	4				
Teachers' College	1	2	3	4				
College	1	2	3	4				

B. Indicate below any additional education which they may have had. The last two lines are left blank for you to fill in the names of any kind of special training not in the list. Use a cross for father's, and a circle for mother's education.

Business College	1	2	3	4
Music School	1	2	3	4
Art School	1	2	3	4
Nursing School	1	2	3	4
.....	1	2	3	4
.....	1	2	3	4

STUDENT RECORD FORM

(Page 2)

Are you like your father?..... Does he understand your problems?.....
 Are you like your mother?..... Does she understand your problems?.....

Age at leaving
 Name of Junior High School..... Junior High School.....

School subjects you have liked best:..... School subjects liked least:.....

Other schools attended: (including special training in art, music, dancing, stenography, etc.)
 Name of School..... Date Attended..... Courses Taken.....

List the offices you have held in your class, home room, club, etc.

7B..... 10B.....
 7A..... 10A.....
 8B..... 11B.....
 8A..... 11A.....
 9B..... 12B.....
 9A..... 12A.....

You will find listed below several kinds of leisure time activities. Draw a circle around each of the activities in which you engage frequently. Include both the things you liked to do in grade school and the things you like to do now. Add any activities in each group that do not appear on the list.

1. INDIVIDUAL ACTIVITIES, either organized or unorganized.

- A. Tennis, golf, fishing, hunting, hiking, horseback riding, ping-pong, boxing, handball, skating, bicycling, bowling, and.....
 B. Movies, billiards, pool, listening to radio, stamp collecting, auto riding, woodworking, cooking, modeling, and.....
 C. Reading, theatre, concerts, art museums, lectures, dance recitals.

2. GROUP ACTIVITIES, either organized or unorganized.

- D. All team sports, such as football, baseball, basketball, volleyball, hockey, and.....
 E. Dancing, "dates," bridge, poker, picnics, and.....
 F. Dramatic clubs or organizations, music clubs or organizations, discussion groups, debating teams or societies, political clubs or organizations, literary clubs, and.....
 G. Were you, or are you, an active member of any of these organizations:
 Y.W.C.A., Y.M.C.A., Boy Scouts, Campfire Girls, DeMolay, Knights of Columbus or Pythias, High School Secret Society, Fraternity, or Sorority, and.....
 H. Church attendance, Sunday School Attendance, Sunday School Teaching, participation in Young People's Society of some church, sing in church choir, etc.....

PLEASE ADD ANY OTHER LEISURE TIME ACTIVITY OR HOBBY:.....

STUDENT RECORD FORM

(Page 3)

List below all of the magazines which you read regularly, and underline the ones for which you or your family subscribe:

Circle types of books that interest you most. Fiction, biography, travel, mystery, scientific, poetic, others

How do your parents feel about your future education after high school?

Check any of the following which are applicable.

TRADE SCHOOL (such as business college, mechanics' school, hair dressing academy, linotype training, barber college, etc.

.....Very anxious for you to go to trade school.

.....Interested in your success in a special field. Which field?.....

.....Opposed to your going to trade school. Why?.....

COLLEGE

.....Very anxious for you to go to college.

.....Interested in your success in a special field. Which field?.....

.....Feel that a college education is socially desirable.

.....Opposed to your going to college. Why?.....

Place a check mark in front of the item appearing in the list below which best describes your financial support if you continue your education after high school.

.....My family will provide complete financial support.

.....I will be totally self-supporting.

.....My family will provide partial support, but I must earn the rest through part-time employment.

.....I have enough savings or income to pay part of my expenses, but I must earn the rest with a part-time job.

.....Other type of support. Explain.....

Do you plan to continue in school after you graduate from high school?

.....Yes Are you sure?.....No. Are you sure?.....

What school will you attend?.....

What course do you plan to take?.....

Have you talked future plans with your parents?.....

Have you talked future plans with school advisor or instructor?.....

Name of school advisor or instructor.....

Leave blank if you have not talked plans with any school official.

Did your parents agree with your plans?.....

Did your advisor?.....If not, what did he suggest.....

STUDENT RECORD FORM

(Page 4)

Circle any of the following words which describe your general makeup:

Persevering, friendly, patient, stubborn, capable, tolerant, calm, impetuous, pessimistic, reserved, bashful, self-confident, jealous, quick-tempered, cynical, tactful, conscientious, cheerful, submissive, excited, irritable, anxious, frequent periods of depression, talented, easily exhausted, unhappy.

Have you any physical disabilities? Yes..... No.....

What are they?

At what age did they become noticeable?

If you have had any of the following illnesses, UNDERLINE the illness, and enter the age at which you were ill in the space following. If you do not know the exact age, put in approximate age.

Whooping cough..... Mumps..... Measles..... German measles..... Chicken pox.....

Encephalitis..... Epilepsy..... Infantile paralysis..... Pneumonia..... Tuberculosis.....

Influenza..... Any unexplained respiratory disorder..... Chorea (St. Vitus Dance).....

Rheumatic fever..... Small pox..... Diabetes..... Stuttering..... Stammering.....

Other speech defects (specify).....

Eye defects (specify).....

Hearing defects (specify).....

Hernia..... Fainting spells..... Convulsions or fits..... Dizziness.....

Tingling in hands or feet..... Frequent or persistent headaches..... Frequent or

persistent backaches..... Nervousness..... Sleeplessness..... Other illnesses not

listed above

Height..... feet..... inches..... Weight..... pounds

Do you wear glasses?..... All the time?..... For reading only.....

How often are you absent from school because of illness? Never.....

Frequently..... Seldom.....

Brothers' and Sisters' Names	Sex M or F	Education Highest Grade Reached	Married Yes or No	Occupation, (if unem- ployed, give usual Oc- cupation or training)
1.....
2.....
3.....
4.....
5.....
6.....

If you need additional space, use back of sheet.

STUDENT RECORD FORM

(Page 5)

List in chronological order all your work or employment experience to date, including part-time or summer jobs.

Name of Company or Employer	Specify What Kind of Work You Did	Length of Job		Salary Per Day
		From	To	
.....
.....
.....
.....
.....

Which of these jobs did you like best?.....
Why?.....

What is your present vocational choice?.....
When did you make this choice?..... Why? Check one of the following:
Family suggestion..... Friend's or teacher's advice.....
Family tradition..... A choice of your own.....
Following the vocation of someone you admire.....

How much information have you about the requirements of the vocation you are choosing?
(Check one) None..... Some..... Extensive.....

Where did you get this information? (Specify books, talks with men in that work, lectures, class, etc.).....

It is possible to make a rough classification of occupations in terms of your general interest and abilities. In the following list, indicate in order of preference (1, 2, and 3), the *three groups* in which you believe you would best fit.

- Occupations involving business contacts with people, such as various fields of selling, promotional work, politics.
- Occupations involving business detail work, such as accountancy, business statistics, cashier, banker, stenographer, office work.
- Occupations involving social service activities, such as YMCA worker, Boy Scout executive, personnel worker, social case worker, teacher.
- Occupations requiring special artistic abilities, such as musician, actor, artist, interior decorator, designer.
- Occupations requiring executive ability, such as director, office manager, foreman, superintendent.
- Occupations involving technical or scientific work, such as engineer, chemist, surgeon, architect, research worker, inventor, toolmaker.
- Occupations involving verbal or linguistic work, such as lawyer, newspaperman, author, advertising man, professor, librarian.

If occupations in which you are interested are not listed above, please name them:

.....
.....

Information About Parents

The second section of page 1 deals with the student's parents and their marital status. An understanding of a student's family background may be the key to the mysteries of his behavior. For instance, a girl whose parents are divorced may feel inferior to other girls whose parents are living together happily; as a result she may withdraw from all competitive activities. Another girl in the same situation may react with aggressive or attention-getting behavior in order to compensate partly for lack of affection at home.

The third section of page 1 deals with parents' occupation, a valuable clue in guidance work. This section may, for example, give some indication of the family's socio-economic status. With reference to this matter, however, Warner and his associates have pointed out the danger of judging an individual's social standing solely on the basis of his occupation.¹⁰ Studies made by others, however, have shown positive relationships (a) between occupational level and socio-economic status and (b) between occupational level and ability as reflected in educational achievement. But the correlations expressing such relationships are so low that it is impossible to predict accurately a student's ability from a knowledge of his father's occupation alone.

There is some evidence that the majority of individuals climb about as high on the occupational ladder as did their parents. Although a great deal of caution must be used in generalizing from such evidence, its significance to the counselor must not be overlooked. With reference to the occupational ladder, it is commonly accepted that children whose fathers are in lower occupational groups have poor home backgrounds. However, families of the low-income groups may provide a home environment superior to that of some high-income families.

In the third section of page 1 of the Student Record Form, moreover, the student is to write in his father's specific title, position, or work. A number of students do not fill in these blanks. This omission may be a deliberate "oversight" to avoid

¹⁰W. Lloyd Warner, *Social Class in America* (Chicago: Science Research Associates, 1949).

revealing facts that the student finds unpleasant. One student, for instance, may be ashamed that his father is a dishwasher or a janitor. Another student may use an ambiguous title to describe his father's occupation, such as "engineer" to indicate a fireman or stationary engineer, or a "grocer" to designate a grocery store clerk.

Knowledge of the mother's present occupation may help in understanding a student's environment. Little research has been done on the effect on a student of his mother's working outside the home. Counselors believe, however, that knowledge of a mother's outside employment may furnish valuable clues to the type and extent of home supervision as well as to the family's financial status. And even more important, such knowledge may illuminate the student's responsibility in the family. Because a mother works outside the home, the oldest son or daughter may have heavy family tasks, particularly care of younger brothers and sisters.

The fourth and last section of page 1 calls for facts about the education of the student's father and mother. This information is valuable in counseling with the student about his further educational plans.

Information About the School Background and Activities

Page 2 of the Student Record Form is devoted largely to the student's likes and dislikes for a variety of activities. This page supplies many worthwhile leads to topics which the student may be willing to discuss. For example, knowing in advance that a student likes certain activities is a great help to the counselor in the opening phase of a fact-finding interview.

The information which the student gives on page 2 of the record form may also be used to ascertain tentatively the pattern of his interests. To illustrate, if a student indicates that he likes algebra, arithmetic, and bookkeeping best of all school subjects, it is reasonable to assume that he has an interest in working with figures. If a student expresses a preference for subjects in the scientific or technical fields, this may have significance for his vocational planning. In such planning, of course, the student's preference is only one factor; it must be considered along with others—his aptitudes and achievements,

for example. Further, with regard to a student's preferences, it seems wise to add this word of caution: A student's attitude toward a subject is frequently influenced as much by his like or dislike for the teacher of that subject as by his reactions to the subject itself.

On page 2 of the Student Record Form, the items concerning offices held give important information about a student's behavior in the field of leadership. It can be assumed that students who are "natural" leaders will win offices and will list these offices on their record forms; likewise, students listing no offices held are not likely to be school leaders. Among the latter, there are some students who desire leadership positions, but who are unable to attain them. There are also some students who are content with a followership role, often an important determination for the counselor to make.

In the third section of page 2, the student reports his leisure-time activities. This section provides essential information for teachers and counselors. In analyzing a student, for example, the counselor asks: Does the student seek recreation by himself or with others? Are the majority of his activities outdoor or indoor? What is the educational or cultural level of this student's activities? The answers to these questions may help the student and counselor in vocational planning. They provide clues to whether or not the student's chosen occupation should be largely outdoor or indoor, individual or social, practical or cultural.

The section dealing with leisure-time activities, moreover, can be used to identify potentially-maladjusted students. Why does this student avoid all activities involving contacts with other persons? Why is this student engaging in so many activities which involve competition to the exclusion of solitary activities? Answers to questions like these, all related to a student's leisure-time activities, may be keys to an understanding of his personality development and structure.

Information About Reading Interests and Educational Plans

The first two sections of page 3 deal with the student's reading, another source of information concerning his interests. Frequently, a student's choice of magazines and books follows

a definite pattern. If this is the case, certain ideas about his interests can be formulated. For instance, one student states that his reading is largely confined to scientific publications; he can be presumed to have a definite and active interest in this field. Yet another student professes an interest in science but reports that he reads only fiction; he can be questioned reasonably as to the intensity and stability of his claimed scientific interest.

The behavior of nearly all persons is affected to some extent by what they believe to be their parents' attitudes. Many illustrations of this can be found in clinical literature. The third section of page 3 calls for the student's estimate of his parents' attitudes, but admittedly does not probe these attitudes deeply. The items, however, do furnish a promising beginning point for discussion of such matters.

In analyzing the items in this section, it should be recognized, the student may not give an accurate report of his parents' feelings. He may never have discussed further education with his parents. Or, if he did so, he may have misinterpreted their feelings. Perhaps he reports his own feelings rather than those of his parents. These possible "errors" do not detract from the usefulness of this section, because a student's perception and interpretation of his parents' attitudes are frequently as significant as these attitudes themselves.

Students planning further education must obviously consider the means of financing it. If the counselor is to help a student devise a feasible educational plan, he must have information concerning that student's finances. Such information is called for in the fourth section of page 3 of the Student Record Form. In this connection, it should be noted that, regardless of financial status, students have a marked tendency to check, "My family will provide partial support, but I must earn the rest through part-time employment." This tendency may well be the result of society's belief in the desirability of "working your way through college." It also may be due to the natural adolescent desire to be at least partially independent of parents. Although it may be desirable for some students to work part-time, it may be inadvisable for others to do so. Some students will have all they can do to meet academic requirements. For

such students, means of support other than part-time work are desirable, and should be pointed out to them.

The final section of page 3 deals with the student's statement of his future plans. It provides some insight into the amount of planning which the student has done. It also identifies the individuals with whom the student has discussed his plans. At times, these individuals can be called upon to furnish additional information about the student.

Information About Personal Traits, Health, and Siblings

On page 4 of the Student Record Form, the first section requires the student to circle any word in the list of traits which describes his "general make-up." The traits a student encircles may aid the counselor in identifying maladjustment or in evaluating adjustment.

In using this check list, the counselor should keep in mind that a student's responses may be influenced by one or more factors. The student may avoid encircling any traits which truly describe him. He may describe himself correctly, but may do so naively. He may overemphasize those traits which he obviously lacks and strongly desires. Proper analysis of this section demands that reasons back of the responses be analyzed.

The next three sections of page 4 deal with the physical development and the health of the student. At the outset it should be recognized that these sections provide for reports by the student himself. Such reports, of course, cannot take the place of a physician's examination or a nurse's inspection. In these sections, nevertheless, a student may point to the need for additional information concerning his physical or health status.

The last section of page 4 calls for information about the student's brothers and sisters. This information may supply additional clues to the family life of the student. If the other children are older than the student, their attainments are sometimes indicative of what that student will aim at in order to secure recognition. If other members of the student's family have generally high or low educational and occupational levels, this fact may be significant in his planning. Should the level of the student's educational or vocational plan be far out of line

with that attained by other members of his family, it is well to withhold judgment on that student's plan until his aptitudes and abilities are checked.

By analyzing a student's responses on this section, teachers and counselors may be able to find some reasons for his maladjustments. In doing this, however, they should guard against hasty and unsupported conclusions, such as presuming a child is maladjusted solely because he is an "only child." True, some only children require much attention and, if they do not get it, become "problem children." But some children who have brothers and sisters also require much attention, and misbehave when it is denied. Problems of adjustment may arise because a child is much older or younger than the other children, or because he is the only boy among the family's children. Information about a child's siblings can furnish valuable clues to understanding him, but provide little or no basis for definite or sweeping conclusions.

Information About Work Experience and Occupational Interest

The first section of page 5 of the Student Record Form seeks information concerning the student's work experience. This is vital information for those who are helping this student to formulate his vocational plans. Frequently it is found that a student has worked at a job in a field which he later chooses for his life work. Whether or not a student liked the type of tasks encountered in an employment experience, his reactions to this experience may be a lead to his occupational preferences.

The second section of page 5 deals with the student's vocational choice. In most schools a major task of the counselor is to help determine whether or not the vocational choice of a student appears to be a logical or reasonable one. In making this determination the counselor will find that the student's reasons for the choice provide an excellent starting point for a fact-finding interview. During the interview the counselor may be able to discover whether the student is making a poor choice. The student, for example, may be attaching excessive glamour to a popular field of activity. Or, he may be unduly influenced by associates, friends, or relatives. Or, he may be failing to evaluate his own abilities in terms of occupational requirements.

In the final section of page 5, the student is asked to rate his interests in various broad occupational groups. His ratings become of particular value if they are compared with his specific vocational choice. On the record form, for example, a girl wrote that she planned to become a nurse. In rating the groups of occupations, however, she gave first preference to those occupations involving business detail work. Obviously there was a marked inconsistency between her specific vocational choice and her broad occupational interest. Certainly her attention should be called to this apparent discrepancy. If her interest had been consistent with her choice, this would have added weight to the validity of her vocational choice.

SUMMARY

The Student Record Form can be used to secure a great variety of valuable information. At all times it must be kept in mind that the information is recorded by the student as he wishes to record it. On the one hand, such information may not reflect the true situation either because the student deliberately attempts to conceal the truth or because he does not perceive it accurately or fully. On the other hand, such information may be a true report of the student's situation. In either case, the Student Record Form supplies personal data which furnish valuable clues to an understanding of the student. In conjunction with other analytical tools and techniques, such a blank is a highly useful diagnostic instrument.

SUGGESTED READINGS

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- Havighurst, R. J., and Taba, Hilda. *Adolescent Character and Personality*. New York: John Wiley and Sons, 1949. Chapters 19-25.
- Traxler, A. E. *Techniques of Guidance*. New York: Harper and Brothers, 1945. Pp. 28-41.

Self-Report Documents: The Autobiography

FROM time immemorial, autobiographies have been a rich and unique source of information about people's lives. Historians have relied heavily upon this source to gain insight into the make-up of men and women. Other social scientists have increasingly depended upon personal documents in their research and writing. Psychologists also have made use of autobiographical material to gain an understanding of individuals. As early as 1902, William James based his book, *The Varieties of Religious Experience*, upon autobiographical writings.

Sigmund Freud and his fellow psychoanalysts have brought into sharp focus the contributions which autobiographical data make to an understanding of behavior. Psychiatrists, psychologists, and psychotherapists have shown the many values that are derived when the patient recalls and reconsiders autobiographical data.

Teachers and counselors have demonstrated the worth of the autobiography. For example, in writing autobiographies, some students are able to release certain tensions. Others find that this experience gives them new insights, insights that help them to construct more satisfying and more meaningful self-concepts. As Starr says, the autobiography may assist the student "to organize past, present, and future experiences in such a fashion as to see their personal significance."¹

The mere writing of an autobiography, of course, has limited value for the student. Its great potential value can be realized only if he has an opportunity to consider this personal

¹G. G. Starr, "An Evaluation of Student Autobiography as an Aid in the Guidance Program," *Education*, LXIII (September, 1942), 47.

history in a counseling relationship. Otherwise, as Strang emphasizes, there is this danger: "If the pupil does not have the opportunity to discuss his personal documents with the counselor, he may become too introspective or crystallize his self-concept prematurely."¹

WHY SHOULD GUIDANCE WORKERS USE AUTOBIOGRAPHIES?

Autobiographies provide many data which can be compared with those obtained by other methods discussed in this book. Consider the case of a 16-year-old girl who was observed by her teachers to have few friends. She appeared to be very much "a lone wolf." As an English assignment, she wrote her autobiography. It contained the following selected sentences which are quoted exactly as they appeared:

In grade school I had lots of friends and we did lots of things together. The kids would come to my house a lot. My father would play the piano for us and we'd play games. . . . A little after going to Junior High, father was killed in an auto accident. . . . Mother has done everything she could for me since father's death, but she's changed and she doesn't understand me like he used to. . . . Mother and me don't do things together like we all did when father was alive. . . . I guess she's right when she says I have to learn to be independent now that we don't have no man in the family.

It is obvious that these quotations provide significant clues to understanding some of the reasons why the girl appears to her teachers as "a lone wolf." Because the autobiography provides supplementary data, some of which are not obtainable by other means, it has an important place in the counselor's repertoire of fact-finding techniques.

A means of self-expression. The autobiography is invaluable because it allows freedom of expression on the part of the person who is preparing it. As the writer, he can choose to include or to omit any aspect of his life. He is not under the limitation of an interview situation, which may be too short in duration and too controlled by the interviewer. Rather, in preparing his autobiography, a person can spend a considerable amount of

¹Ruth Strang, *Counseling Techniques in College and Secondary School* (New York: Harper and Brothers, 1949), p. 87.

time in thinking about past events and in writing freely and fully about those happenings which have special import for him. These events may appear to be minor details to others.

The role of motives. Freedom of expression in writing an autobiography, of course, presupposes that a satisfactory level of rapport has been established between the writer and the person he knows will read his personal history. Part and parcel of this rapport are the writer's motivations. These motivations vary from person to person. Among the reasons listed by Allport, the following eight are pertinent to autobiographies written in a guidance setting:

1. *Special pleading*—The writer desires to justify his actions, status, or beliefs.

2. *Exhibitionism*—The writer attempts to display himself vividly; he exposes his sins and virtues with equal relish.

3. *Literary delight*—The writer is aesthetically motivated, this being his main if not sole driving force.

4. *Securing personal perspective*—The writer faces an important change in his way of life. [This motivation is strong among high school seniors who are about to enter the world of work.]

5. *Relief from tension*—The writer seeks release. [This motive is discussed in the preceding paragraphs.]

6. *Assignment*—The writer is required to prepare an autobiography. [This reason is common in schools where teachers or other guidance workers are responsible for such an assignment. The danger in this approach will be discussed later in this chapter.]

7. *Assisting in therapy*—The writer is motivated by desire to assist in his own recovery. [When this reason prevails, clinicians find that students are highly motivated to write their autobiographies.]

8. *Redemption and social re-incorporation*—The writer uses the autobiography as one means of pleading for forgiveness and social re-acceptance.³

Allport's list suggests that an individual may have more than one reason for preparing an autobiography. It is unlikely that any given student will have a single motivation: more likely, he will be influenced by a number of motivating factors. That is why, in rapport-building activities, the counselor should be aware of all these factors and should use as many of them as

³G. W. Allport, *The Use of Personal Documents in Psychological Science* (New York: Social Science Research Council, 1942), pp. 69-73.

possible. If the counselor is successful in this task, the counselee will have a real desire to write his autobiography. He will also feel free to express what is most in his mind. Written under these conditions, the personal report of the counselee's life is likely to be revealing and useful.

An indicator of educational level. Some counselors give considerable attention to the judgments which can be made concerning the individual's education as indicated by his autobiography. They look for evidence regarding the ability to spell, to employ rules of grammar, or to express one's self clearly and interestingly. They, of course, do not believe that such evidence should replace that obtained from standardized achievement tests, teachers' marks, or similar sources.

To illustrate the differences in educational attainment which can be observed in the written documents of individuals, consider the spelling ability and the style of writing displayed in the two following excerpts.

A 15-year-old boy in the ninth grade wrote:

In the afternoon after school, I usually do all my homework first. I then help my mother or father. If all my work is done, I am allowed to do what I want. I listen to the radio and read books or magazines. On Saturdays I usually help my father or brother. Sometimes they may take their truck or car to my uncle's garage. I help them greeze it, change the oil in the crankcase or transmission, or clean and refill the air cleaner or radiator, and do many other odd jobs. I like to do this type of work. On Sunday I go to church in the morning and sometimes in the afternoon and evening. Usually my brother and I and a few boy friends all go for a ride on Sunday afternoon.

A 17-year-old boy in the ninth grade wrote:

Most of my leisure time is spent with my rabbits and going to the movies. I never seen my share of movies when I lived in . . . , I thing. I whent to the movies about five time a year there.

Most of my work experience has been farming. I have help my uncle in plumbing, farming, and blacksmith work. I like the farming the best.

I expect to become a farmer. I no more about farming than anything else. My thoughts now are to become a bachelor, "I hope." I would like to finish high school but I probably will not.

It is apparent that the 17-year-old writer has less mastery of the English language than does the 15-year-old writer. Such a conclusion, if supported by other evidence gathered about these boys, would prove useful not only to their English teacher, but also to their counselor. Of course, these autobiographical excerpts point to many other important facts.

Guidance workers recognize that relatively little effort and time are required to secure a large amount of autobiographical material. On the basis of counselor-time expended and in comparison with other techniques of securing information about individuals, autobiographies rank among the most productive.

The writing of autobiographies is often assigned to an entire English class, or their preparation is at times undertaken in the group guidance program. In either case, the teacher must help students to understand and appreciate the values of autobiographies.

The teacher must also make clear to students that the autobiographies will be kept confidential. This agreement should be scrupulously observed by him. Desirably, the teacher should help students to recognize the values of including their autobiographies in their cumulative records. Even though this plan is accepted by a majority of the group, an individual student should have the privilege of deciding whether or not his autobiography is to be kept in his cumulative record folder.

In summary, guidance workers should use autobiographies for these main reasons:

1. Autobiographies provide data which can be compared with those gathered by other means.
2. They allow the writer freedom of expression, or a degree of freedom not found in certain other techniques.
3. They yield much evidence of the writer's adjustment, attitudes, and self-concept.
4. They are inexpensive of staff time and effort.

HOW CAN GUIDANCE WORKERS INTERPRET AUTOBIOGRAPHIES?

No set of rules is available for the interpretation of autobiographies. At best, their interpretation depends upon the reader's sensitivity to the significance of the data presented.

In his use of observation and fact-finding interviews, as mentioned earlier, the guidance worker must recognize and derive meaning from minor clues, nuances, slips of the tongue, gestures, so, in his use of autobiographies, he must be sensitive to a variety of clues.

Some of the main clues found in autobiographies and which frequently lead to understandings are described briefly in the following paragraphs.

1. *Omissions.* No autobiography, of course, is complete in every detail, but a particular biography may have certain kinds of omissions that are noteworthy. For example, during a counseling relationship with one of the authors, a 35-year-old man prepared a single-spaced, typewritten, 32-page autobiography. This unusually long document traced his life from birth until the time he came for counseling. During a routine review of the client's personal data blank, the counselor noted the fact that the man had one sister, but had not mentioned her in his autobiography. The unusual omission aroused the counselor's curiosity. When questioned about his sister, the client's replies indicated that his rejection of her was about as complete as he could make it. He had not seen her for 13 years; he avoided visiting his parental home when she was there. He even forbade his mother to include in her letters news about his sister. Knowledge of this client's attitudes toward his sister proved to be an important key to his problem. This case is admittedly extreme, but it does point out the value of a counselor being alert for omissions.

In the typical autobiography, however, omissions may indicate that things were going along well. As Allport points out:

Happy, peaceful periods of time are usually passed over in silence. A few lines may tell of many serene years, whereas pages may be devoted to a single humiliating episode or to an experience of suffering. Writers seem desirous to elaborate on the conditions that have wrecked their hopes and deprived them of satisfactions. Of lasting happiness, conditions of good health, high morale, and pleasant routine, they have little to say. Personality, looked at longitudinally, does seem to be a succession of organization—disorganization—reorganization. But in interpreting this cycle, the

psychologist should not overlook the silent process of stabilization, nor the immunities and the balancing factors about which the writer may have little or nothing to report. Imbalance may *seem* to prevail in an autobiography whereas balance may be the true mark of the life as a whole.⁴

2. *Length.* The length of an autobiography is dependent upon a great many factors. One factor is the ease with which the person expresses himself through the medium of written language. Another is the level of rapport which has been established between the writer and the intended reader (the teacher or counselor). Still another is the writer's opinion as to the worthwhileness of the undertaking.

Concerning the length of autobiographies, the following tentative statements are presented:

a) Autobiographies written by high school students as an assignment for English or group guidance classes are at least 500 words long and rarely exceed 2500 words. A 1500 word autobiography may be regarded as relatively long.

b) The more mature students are and the more they feel the need for help with their problems, the longer their autobiographies tend to be.

c) Autobiographies prepared in accordance with an outline, such as the one presented later in this chapter, usually are longer than those written without such a guide.

d) Autobiographies written as part of the counseling process tend to be longer than those prepared as class assignments.

3. *Vocabulary.* The nature of the writer's vocabulary is quite evident to readers of his autobiography. The level of his vocabulary is related to his educational and ability levels. This was illustrated by the differences between the vocabularies appearing in the excerpts from the autobiographies of the two ninth grade boys quoted earlier in this chapter.

No discussion of vocabulary is complete without at least a mention of the problem of semantics. Few words in English, or for that matter in any language, mean the same to all who use them. True, such a word as *house* does have a commonly-accepted dictionary definition, i.e., "a structure intended or

⁴Allport, *op. cit.*, p. 78.

used for human habitation." But because one person's experiences differ from those of another, each gets different meanings from the same word. When one person sees *house* in print, he has a mental picture of a little white clapboard cottage like that in which he was born. When another person reads *house*, he visualizes a mansion like that which he now occupies. If such variations occur with such a relatively commonplace and objective word as *house*, how great are the variations in meanings associated with such emotionally-charged words as *prejudice*, *adore*, and *hate*? Because a word may mean one thing to a student and something else to a guidance worker, the latter must exercise care to interpret the word from the point of view of the autobiographer: he must guard against misinterpretation.

4. *Level or depth of expression.* Some autobiographers tell almost exclusively about superficial incidents and commonplace facts. This is particularly true of younger children. As Allport has observed, "Until the age of 13 or after, the child records events wholly in external terms. He writes not, 'I felt this . . . I thought that,' but rather, 'I did this . . . I did that.' Subjective life grows important as puberty approaches, and after puberty there is less dependence upon surrounding influences than in childhood."⁶

Shallowness of feeling or insight, however, characterizes the experiences of some older children. It is often employed by the highly defensive individual to hide his problems. Shallowness also is often the typical approach to the writing task of the individual who sees no point in the autobiography; he is usually an individual with whom rapport has not been established.

Ordinarily, as mentioned before, the typical autobiography is relatively short, often less than 1000 words. Because the personal history is usually so short, few conclusions can be drawn from it. This is true, for example, of the following autobiography written by Gary. He was 15 years old and in the ninth grade when his English teacher required him to write an autobiography as a class assignment. Gary wrote:

⁶Allport, *op. cit.*, p. 80.

I was born on June 12, 19 , at . My father's name is , and my mother's name is . I have four sisters and one brother. Their names are , and . I have lived in the same place all my life until last year. We bought a house at the edge of , and moved there. We have always had the same neighbors around us until I started to school. Then the people on the north side of us moved to . The place where we live now, we have a few neighbors close to us.

Last summer was my first year at Boy's Camp. I went to , where our church has a camp. I also went to , with a friend, which is the farthest north I have ever been. We went in a tractor-trailer truck for a load of cased oil for my father. This trip was very interesting to me.

In school I like to study English, civics, and science. I read mystery, adventure, dog, and horse books and listen to mystery, musical, quiz, and comedy programs.

Contrasting sharply with Gary's rather shallow account are the excerpts which follow from Ada's autobiography. These excerpts reflect a relatively deep level of feeling. Ada, a junior in high school, was 16 years old at the time she prepared her autobiography as part of the counseling process. Excellent rapport had been established. Her I.Q. was 112, according to results of a Stanford Binet test administered when she was a freshman in high school.

When I was six years old my family moved near , where I still live. As an only child, I not only am under the complete attention of both parents but also two aunts and an uncle who live nearby. I have not only been spoiled and given small gifts continuously, but I have been smothered with so much love and attention that I have completely rebelled. Though I realize it is very childish, it takes all my will power to be civil to some of those relatives outside of my home. Concerning my mother and I, we are very close and I was able to talk to her about anything until a little over a year ago (more about that later) though she is very nervous. When I was younger I was terribly afraid of my father, his piercing look and his commanding loud voice. He never explained, he merely ordered me about not allowing me to ask questions, tarry, or explain. Sometimes when he punished me, I didn't understand why, but seemingly that didn't bother him. Another example not long ago a question rose concerning the functioning of our state government. I had proof, namely history books and my teacher's

knowledge which I had checked in order to be sure of my statements. That didn't matter! He was right, and I had no right to question him or even doubt him. But don't misunderstand me, I love my father and his kind, good heartedness and generosity. I no longer fear him and I respect him because he is my father. . . .

In elementary school I remember very well that I was still exceptionally shy and just every little thing could hurt my feelings, thus causing me to cry. I think the kids *often* teased me because they knew I couldn't take it. I was seldom neat in the few clothes I had, for I never thought of myself in regards to my appearance. I was a regular hoyden; perhaps one reason for that is that here at home there are only boys in the neighborhood—and believe me, that can have its disadvantages. I was shy, loud, and boisterous, unusually tall for my age, and slightly chubby. Incidentally I was a whiz in school work and never had any trouble. Once in the third grade a boy told me he loved me. I remember how shocked I was—why he couldn't have meant me, I thought, as I stared at him with my mouth hanging open.

Miraculously, and *very, very* slowly I gained a little confidence. I began to take care of my appearance a little. During junior high school these things took place. But still I never felt too secure. Part of the explanation may lie in the fact that a continuous income could not be relied upon, for Dad and his quick temper often didn't get along with his boss or fellow workers.

But I did improve. However, my summers were often boring since there were only boys in my neighborhood, and somehow they just weren't like girl friends, though they are nice, good looking fellows.

To show you how much I improved, I revisited my old elementary school one day. I met one of the girls with whom I had more or less hung around previously. After teasing me for about half an hour and finding that I only laughed with her (though truly it did hurt) she remarked with surprised wonder on how much I had improved. At the time I didn't know what she meant and she had to explain.

5. *Organization.* Autobiographies may be organized according to a suggested outline, such as the following prepared by Cromwell.⁶

(1) My family (optional)

(2) My first years before school

⁶R. Floyd Cromwell, "Also the Autobiography," *The School Guidance Worker*, III, No. 6 (March, 1948), 2.

- (3) My years in the elementary school
- (4) Places I have lived
- (5) Vacations I have spent
- (6) Trips I have taken
- (7) The way I usually spend the afternoon when school is out
- (8) The way I spend my evening after supper
- (9) The way I spend a typical Saturday and Sunday
- (10) Studies I liked the most; the least
- (11) Some subjects and activities I wish our school would provide
- (12) Things I do well; things I could do well; things I should like to do well
- (13) The work I hope to do (three choices) and reasons for the choices
- (14) Kinds of magazines and books I like to read; kinds of radio programs I like to listen to; kinds of movies I like to see
- (15) If I could have all the things I wanted by asking for them, I would ask for these things

When an autobiography is written according to an outline, few clues can be derived from its organization alone. Even so, these clues may have value. It is at times profitable for the reader to try to guess why the student made changes in the suggested outline. Very frequently the autobiographer's omission of topics points to areas of adjustment in which he is having difficulty.

When the writer is not given an outline to follow, then the manner in which he organizes his autobiography has potential significance, as such questions as these indicate: Why does he choose to highlight certain events? Are these events particularly important? If the autobiography follows the usual chronological order, what gaps in the writer's developmental history are evident? While the answers to such questions do not provide the basis for iron-clad conclusions, they do provide clues which may lead to a better understanding of the individual.

6. *Gloss.* It is common for an autobiography to gloss over certain events. As a result, at first view, the writer's adjustment to an event may appear good. Upon further investigation, the reader may discover that the autobiographer has glossed over a problem which to him was and still is of relatively severe intensity. As illustration, consider Jim, a high-school freshman

of normal intelligence. In his autobiography, he included the following excerpt:

My mother is getting married in April and the man she is going to marry has a small farm. His name is W. B.

I think I'll change my name to Jim B. He wants me to if I don't care, and I don't care because my first father died when I was only five, my second only stayed three months, and left, so why should I care?

During interviews with Jim, the counselor discovered that the boy was much concerned about the impending marriage of his mother. He wondered about such things as how long the marriage would last, whether it was right for him to change his name, and how W. B. would feel if Jim kept his real father's name.

Another example of glossing over a problem is found in the following excerpt from the autobiography of Helen, a girl who was a junior in high school. Helen was living at the time with her widowed mother, a very compulsive and domineering woman who earned her living outside the home. Helen wrote:

I really have to hurry to get all this done by six o'clock. She likes everything clean when she gets home. I'll always be clean as long as I'm around my mother, for she's very stern about her housework, her body, and me. I love her dearly even if she has to have everything just so, but I suppose that's why I love her.

Did Helen really love her mother because everything had to be "just so"? Probably not. Her mother's compulsive insistence upon cleanliness and orderliness was a major source of irritation for this girl. Glossing over the situation was this girl's method of handling a very difficult adjustment problem.

7. *Fabrication.* In this context, fabrication is used to denote (a) inaccurate statements made with the deliberate intention of deceiving, and (b) those errors of which the writer is unconscious. The motives which lead to deliberate falsification are, of course, numerous and vary with individuals. Whatever the motives of the writer, an autobiography containing many such falsifications is usually produced in low rapport situations. In fact, the nature and extent of fabrication appearing in an autobiography are indications of the level of rapport prevailing.

Unconscious errors in an autobiography, however, are not an indication of level of rapport. These errors may truly reflect the individual's self-concept. Even though the details of his autobiography do not agree with the facts (or perhaps more accurately, with the reader's view of these facts), these details can reveal much of value. As Allport says, "Prejudices, self-deceptions, wholesome and unwholesome outlooks, ego ideals, mannerisms, complexes, aspirations, errors of insight, and the reasons for persistent failure—all of these and many other characteristics can glimmer or glare through a document whose accuracy in reporting and self-appraisal is not to be trusted. It is often more important to study the beliefs that men *betray* than those that they *parade*."¹

How does one know when the autobiography can be believed? No set of universal rules for the verification of autobiographical material has yet been formulated. The work of Frenkel-Brunswick has, however, provided some clues. In a study which used University of Vienna students as subjects, she compared their actual behavior with their statement of the principles which guided their conduct. She found that "the assertion of principles directed toward basic characteristic traits and social attitudes (e.g., *to be helpful, to live joyfully, not to be dogmatic*) would seem to be in the nature of a compensation for the actual lack of such traits and attitudes."²

Allport cites the work of Frenkel-Brunswick as a step in the direction of making autobiographical interpretation a more meaningful process. He then points out the significance of Frenkel-Brunswick's finding that autobiographers who make excessive use of superlatives, absolute statements, or repetition frequently introduce unconscious errors in their writing. Regarding this, Allport continues: "A student . . . rated by his associates as intractable and 'madly over-ambitious' wrote, 'I always do what I am ordered to do.' Universal terms such as 'always,' 'only,' 'at all costs,' as well as repetition of assertions have negative correlations ($-.50$ to $-.60$) with ratings by associates for the qualities in question. Conversely, tentative

¹Allport, *op. cit.*, pp. 30-31.

²Else Frenkel-Brunswick, "Mechanisms of Self-Deception," *The Journal of Social Psychology*, X (August, 1939), 416.

statements, such as 'I am not sure whether or not I succeed in carrying out this ideal of mine,' are more often associated with actual behavior."⁸ The experience of reading a large number of autobiographies and following these with interviews tends to sharpen the counselor's ability to perceive these "self-deceptions."

8. *Appearance.* Some guidance workers believe that the physical appearance of an autobiography tells them many things about the person who wrote it. A neat appearing autobiography, for example, is presumed to be the product of a person possessing the characteristic of neatness. While there may be some positive relationship between appearances of autobiographies and the behavior patterns of their writers, the correlation probably is not high enough to make sound judgments when dealing with individual cases. Appearances furnish hunches, but little evidence.

A feature of an autobiography's appearance is the hand writing of the person who wrote it. The case for the analysis of handwriting is forcefully stated by Wolff, in his book, *Diagrams of the Unconscious*.¹⁰ However, the evidence which Wolff cites in support of his point of view is meager. Billingslea, in reviewing the book, says "In my opinion" (1) his theoretical points are sufficiently sound to warrant investigation, (2) his individual signature analyses are instructive, but (3) his claims for experimental verification cannot be confirmed on the basis of material included or referred to. . . ."¹¹ Billingslea's statement can probably be generalized to apply to the present status of handwriting analysis. The technique seems worthy of further investigation, but at the present time many of the claims for its usefulness as a diagnostic technique have not been substantiated.

9. *Tonal variations.* One of the most fruitful leads in the interpretation of autobiographies is the detection of tonal variations. Admittedly it is difficult to identify as well as to

⁸Allport, *op. cit.*, p. 31.

¹⁰Werner Wolff, *Diagrams of the Unconscious* (New York: Greene and Stratton, 1944), p. 429.

¹¹Fred Y. Billingslea, "Review of Wolff's *Diagram of the Unconscious*," *Psychological Bulletin* XLVI, No. 1 (January 1950), 91-93.

describe these variations, nevertheless, they are real and worthy of the counselor's attention.

Examples will help to illuminate the nature of tonal variations. It is relatively easy to sense when a person is talking about something which touches him deeply. If he is greatly concerned and involved, he reveals this through gestures, quality of speech, and facial expressions. Through such behavior, a teacher indicates his tremendous concern with reference to a student just interviewed. Likewise, because this teacher lacks interest in professional baseball, he dismisses the subject with a shrug of the shoulders saying in effect, "The Yankees won the World Series. So what?" Thus, the differences between his behavior while discussing the student and that while talking about Big League baseball may be described as tonal variations. At one time his actions are alert, or even tense, at another, they are relaxed or even sluggish.

In physiology, *tone* connotes "the normal responsiveness to stimuli." It is in this sense that *tonal* is used in this section. This connotation, however, needs amplification when applied to autobiographies. At the time of writing an autobiography, the individual's stimulus is not the actual event; rather, it is the memory of the event. Hence, his response to the recalled event is colored by the response he made at the time the event occurred. A boy who spent an unhappy two weeks at summer camp will have unpleasant memories of the experience. When in the process of writing his autobiography he recalls the camp, his unpleasant associations with the experience will be reflected in his description of it. The words he uses to portray his experience will be emotionally charged. The tone of his description of the camping experience will be much more intense than that of his descriptions of other events which do not have such a heavy emotional loading. The task of identifying tonal variations is, therefore, one of perceiving when the autobiographer's responses to past events are more intense than is usual or normal for him. If the counselor perceives accurately such tonal variations, he gains increased insight into the dynamics of the individual's behavior.

How can these tonal variations be identified? The answer involves a two step process. First, the counselor reads the auto-

biography in its entirety to determine the general tone—that is, to find out how the person normally writes about his life experiences. After the counselor has thus learned the tone which predominates the autobiography, he is ready to take a second step. He does this by reading the autobiography a second time. At this reading, he locates instances where the tone varies from that of the document in general. Once these incidents are identified, the counselor analyzes them to determine their probable impact upon the individual's development.

The process of identifying tonal variations may be clarified by the following excerpts from the autobiography of Ruth. At the time of writing it, she was 17 years old, and a junior in high school. Her I.Q., as measured by the *Otis Quick-Scoring Mental Ability Test*, was 118. Typical of the general tone of Ruth's autobiography are the following paragraphs.

In the sixth grade I made a great many oral reports. I was elected to a safety council in the school in the sixth grade, but I didn't care much for it. It involved too much reporting of people who violated rules.

The year that I went to the seventh grade, I went to School I was in 7th with only one girl I knew. My friend E. _____ was in 7th. The school board had the seventh grade divided into four groups, but we could see each other at lunch hour during which we could go anywhere we wanted. I was friendly with a couple of girls in my class and then during the winter Gertrude, Dorothy, and I became friends and still are.

In the eighth grade Gertrude and I were in the same class and went around together until I moved.

In contrast to these rather prosaic paragraphs is the following excerpt, also from Ruth's autobiography:

When I came down here, this town looked very bare and cold, because the leaves were all gone from the trees. The first day I went to school I got off at the wrong bus stop. In fact, two stops before the school. However, I was under the impression that I had passed the stop and began walking in the wrong direction toward home. If I hadn't met two girls who were going to school I probably would have gotten lost. Mrs. H. _____ put me in charge of a group of girls that first day and they guided me around the school. After that I was on my own and I didn't have much fun finding my way around the school. Now that I've been at this school a while it doesn't seem so big, but it was monstrous to me when I got here.

From the foregoing excerpt it is clear that Ruth was unhappy the first day in school. By comparing the tone of her description of that particular day with that of other events in her life, as reported elsewhere in her autobiography, it is possible to compare the *relative* intensity of the feelings she experienced upon starting in the new school.

From this same example, it is possible to point out three of the most common earmarks of passages which are likely to have **more emotional overtones**:

a. The writer usually describes the event in greater detail than other events. Compare, for example, the length of Ruth's description of her first day in a new school with that of the entire year spent in the seventh grade.

b. The writer tends to describe how he felt or what he thought at the time of the event, rather than merely to recite a chronology of happenings. In the excerpts from Ruth's autobiography, note particularly the statements: "I was under the impression," "I didn't have much fun," and "It doesn't seem so big, but it was monstrous."

c. The writer frequently uses a greater number of color words and phrases—ones having, in some degree at least, emotional connotations. In Ruth's description, she employed such expressions as "very cold and bare," "wrong," and "lost."

AN EXAMPLE OF THE USE OF INTERPRETATIVE CLUES

The authors have described nine kinds of clues which, if followed up, can lead to a richer understanding of the writer of an autobiography. How these clues can be used is illustrated by a personal history written by Al, a 17-year-old boy enrolled in the ninth grade. His autobiography is given next exactly as he wrote it including spelling, punctuation, and paragraphing. The paragraphs have been numbered so that the reader can easily refer back to them in the discussion which follows the autobiography.

My Atobiography

I

The place of my birth was in 'town, state' in the county of . This mistake happen on the 15th day of January in the year 19 . The town has now grown up somewhat to the

hadn't been from my English teacher this year. In [name of school] I went out for the football team. I made the second team, but they would not put me on the first team, you had to be in 9th grade and I was in the 8th. I had the weight for football which was about 160 lb. I wasn't as fast as the rest of the boys in playing basketball but I played it. I could place baseball better than I could play basket ball. But I like football the best of all. In town I belong to the F.H. Club, which is like the F.F.A. "The Future Farmers of America." I got a lot out of the club and I enjoyed it. A hobby of mine is helping my uncle with some of his trades, blacksmithing and also farm work. Also I raise rabbits. My favorite sport are baseball and football. At the time I do not belong to any clubs. Most of my summers have been spent on a farm, there I keep out of trouble. Most of my leisure time is spent with my rabbits and going to the movies. I never seen my share of movies when I lived in state, I thing I went to the movies about five times a year there.

V

Most of my work experience has been farming. I have help my uncle in plumbing, farming and blacksmith work. I like the farming best.

VI

I expect to become a farmer. I no more about farming than anything else. My thought now are to become a bachelor. I hope. I would like to finish high school, but I probably will not.

The clues which appear in the paragraphs from Al's autobiography are described next. The kinds of clues are arranged in the order in which they were discussed previously.

1. *Omissions.* Much has been omitted from Al's autobiography, especially information which deals with the status of his family and his feelings toward his home life. Although he assumes that the reader knows about his parents' separation, he never reveals his feelings about it. Neither does he elaborate on his statement in paragraph III, "My step-father did not treat me very good." Although no mention is made of the persons with whom he is now living, this is not surprising. Present conditions or recent events are frequently omitted from such personal histories. The commonness of this phenomenon has led some persons to suggest that autobiographies should stop at some definite point in the past.

When Al's autobiography was compared with his other school records, it was discovered that he had had rheumatic

fever while he was in the eighth grade. The illness restricted his participation in athletics. Why did he fail to mention in paragraph IV that his health was a factor in the story of his football participation?

Al tells little about his school experiences. He reveals even less, citing only one club, about happenings which were happy and interesting. Not one person of his own age is mentioned in the autobiography. This omission gives the impression that he is a boy who does many things alone. His interests in farming, raising rabbits, and seeing movies tend to confirm this impression. He does, however, refer to some activities which involve associations with other persons.

2. *Length.* Al's autobiography is approximately 800 words long. The length seems proportionate to Al's age (17 years) and to his grade placement (ninth). His core curriculum teacher, at whose request the autobiography was written, attached several comments before she placed it in the cumulative record. She and this student had apparently established a fair degree of rapport as is indicated by the following:

"Prior to asking Al to write his autobiography, I made a special effort to get to know him. This was done mainly by sitting near him at lunch and getting him into various conversations. He was friendly in his talking and kept the conversation going every day."

The reader might speculate that Al's autobiography was as long as it was simply because he had a long outline to follow. If true, then the indication of rapport which is inferred from the *length* might be erroneous.

3. *Vocabulary.* The vocabulary which Al displays in his autobiography is not large; definitely it is smaller than that expected of an average ninth-grade student.

Al misspelled many words. It is interesting to note that "went" is spelled correctly at times and at other times is misspelled as "whent." Also, note that "know" is spelled correctly in paragraphs I and IV, but used incorrectly. The reader might suspect that Al spells by ear rather than by eye and by rule.

Al's faulty sentence construction and his errors in grammar indicate that he has a definite deficiency in English training.

Who could disagree with Al when he says in paragraph IV, "I never know a thing about English!"

4. *Level or depth.* Al's teacher wrote the comment: "In the autobiography, he has literally 'let himself go' to a certain degree, but restrains himself in writing of his inner feelings." It clearly seems that at times Al uses a matter-of-fact statement to describe an incident which must have caused turmoil within him. Imagine how Al must have felt at the time of the incident which he described thus: "My step-father did not treat me very good. My mother told my father, than he said he would take care of me." Or, consider the feeling behind this even more cryptic statement: "Later my father and I became bachelors for about a year or less."

5. *Organization.* With few exceptions, Al's autobiography relates his experiences in chronological order. Paragraphs V and VI in particular suggest that he had an outline to guide him in his writing. Although the reader does not know whether Al followed an outline, he might guess that paragraph V was written in answer to such questions on the outline as, "What kind of work experience have you had? Which work did you like best?" Other paragraphs in this autobiography appear to be answers to questions. The organization of Al's autobiography provides few clues of any value for further consideration.

6. *Gloss.* Al's autobiography, as described earlier, is written at a rather superficial level. He appears to gloss over his entire life. He cites many events but rarely reveals his feelings about them.

The boy does, however, make one or two statements which give the reader a definite impression that he is glossing over events which had deep meaning for him. Two such statements are: "My step-father did not treat me very good," and "My father and I became bachelors." Another such statement is: "The doctor set it [his wrist] but its still out of place and hurts." Al's complaint about his wrist was substantiated by the school health records. His father had been informed of the condition and was urged to get Al examined by an orthopedic specialist. The nurse's follow-up indicated this had been done. Subsequently, Al was reported to have said, "Sometimes it hurts so bad, I can't sleep. But dad says I'll grow out of it."

Still other examples of gloss are found in paragraph III when Al describes his failure to be promoted in these words: "The first year I didn't do so well so I repeated the first grade." Or, again, in these words: "They, the school, made me repeat the third grade and I did."

7. *Fabrication.* There were no discrepancies between the facts reported in Al's autobiography and the information recorded in his cumulative record. Moreover, his teacher, for whom the autobiography was written, reported that Al's autobiography was consonant with what she knew about the boy. His autobiographical report, therefore, can be considered to be factual and can be taken at face value.

Certain unconscious "errors" can be detected by carefully reading the autobiography. In paragraph II, for example, Al states: "My interests never stayed in one place very long." Does Al mean interests? Or does he really mean that he never stayed in one place? Probably the latter, because he refers to his constant moving from parent to parent, to friend, to aunt, and so forth. Such unconscious errors as that just cited, however, do not appear serious. Perhaps if Al had expressed more of his inner feelings, more of these errors would have been apparent.

8. *Appearance.* The autobiography was written in long-hand with pen and ink on ruled paper. Its general appearance was neat although marred by the poor erasures. The appearance of this autobiography is not likely to have any special significance.

9. *Tonal variations.* One outstanding feature of Al's autobiography is its monotony. He reported the facts, but did so in a very detached manner. It is almost as if Al had written this personal history about someone else, not about himself. He may well have used this objective reporting to mask his real feelings, that is, to keep others from learning too much about him. In a few places, however, Al removes the mask and reveals his inner feelings. An excellent example of this important tonal variation is found at the beginning of paragraph IV, "What I enjoyed about (name of high school) was when I got tired of school I looked out the window at the mountains, which were small ones." This statement provides a significant insight. How barren and unhappy his school life must have been! How little

that school touched him, if he remembers only the pleasure he found in escaping from school by looking at the mountains!

Just before the autobiography ends, Al departs again from the usual monotone. He wrote: "My thoughts now are to become a bachelor, 'I hope.' I would like to finish high school, but I probably will not." These statements pose many questions for the counselor who is sensitive to the deepest needs of this boy. Furthermore, these statements are particularly significant because they provide the few clues to Al's behavior. It seems reasonable to assume that Al made these statements because they revealed experiences about which the boy was unwilling or unable to hide his feelings. Such an assumption is based, of course, upon the observed tonal variations.

SUMMARY

The reader can inspect an autobiography for a variety of clues. In making such an analysis, the reader will find that some but not all clues will lead to a greater understanding of the writer. Yet, the reader must pursue all clues to make sure that he discovers and uses those which have real significance.

A final word of caution is an appropriate ending for this chapter. The autobiography has been presented as a technique which can provide insight into the life of an individual. The richness of this insight is, of course, dependent in large measure on the kind of autobiography which the person writes. But this richness is even more dependent upon the skill and sensitivity of the reader as interpreter. Hence, this caution: Conclusions drawn from an autobiography should be compared with those drawn from other available data. Only if this is done, can the competence of the interpreter be improved. Only by such constant comparison of data from different sources can the interpreter truly understand the individual under study.

SUGGESTED READINGS

(See also list at end of Chapter 7)

Allport, G. W. *The Use of Personal Documents in Psychology and Science*. Bulletin No. 49. New York: Social Science Research Council, 1942.

- Germane, C. E., and Germane, E. G. *Personnel Work in High School*. New York: Silver Burdett Company, 1941. Pp. 82-93, 183-184.
- Murray, H. A., et al. *Explorations in Personality*. New York: Oxford University Press, 1938.
- Strang, Ruth. *Counseling Technics in College and Secondary School*. New York: Harper and Brothers, Rev. Ed., 1949. Chapter 4.

The Principles of Guidance Testing

TESTS have a peculiar fascination for many people. School counselors, for instance, report that students frequently request permission "to take some of those vocational aptitude tests to find out what I should do." Not only do students occasionally exhibit great faith in tests, but sometimes persons with guidance responsibilities act as though tests were infallible. It seems appropriate, therefore, to begin this chapter with a brief statement of the role of tests in the guidance program.

WHAT ARE THE VALUES OF TESTS IN JUDGING STUDENTS?

Teachers, counselors, and others must make judgments about an individual student's strong and weak points if they are to help guide him in his work. If their guidance program is to function effectively, then their problem is to make as sound judgments as possible. These judgments are usually made by teachers and counselors while watching the *student* "in action."

The student's performance in a classroom examination leads to a teacher's judgment about his mastery of the subject, usually stated as a letter mark. The student's behavior on an eye examination leads to the physician's judgment about his visual powers. The student's speed in the 100-yard dash, timed in seconds, leads to the coach's judgment of his competitive standing in a track meet. In each case, the student *does something*. From this sample of his behavior, one or more observers derive information and make judgments about him. In the chapter on observations, the authors pointed out the great contribution which these samples of behavior make to judgments

about students. These behavior samples are actually *tests*, although informal in nature.

It follows, therefore, that no person can rightly say, "I don't believe in tests," or "I can't see any value in all these tests." His statement is unjustified particularly when applied to carefully constructed tests, because such tests provide a standardized observational situation for studying a sample of behavior. Stated another way, teachers and counselors necessarily observe students in one way or another to obtain certain kinds of information. If their methods of observation are standardized and precise, they secure information that tends to be both reliable and valid.

When a counselor deals with an individual student, he must be able to obtain and combine wisely both numerical and adjectival information. Observations based on tests are usually expressed numerically, and therefore can be treated statistically, as illustrated in the examples in Chapters 2 and 3. Observations not based on tests, as was seen in Chapter 4, are usually expressed by descriptive adjectives, such as a *lazy* student, a *disciplinary* problem, a *bright* child, or a *daydreaming* youth.

Certain aspects of behavior cannot be measured by tests; they can only be *described* by an observer. For example, "stick-to-it-iveness," "will power," "motivation," "honesty," "dependability," and "social surefootedness," are important traits which can be *described*, but which are difficult to estimate numerically.

The degree to which a student possesses such traits can be estimated by observers without the assistance of tests. By observing a student's behavior over a long period of time, they can improve their estimate of his "dependability" for example, and such an estimate is acceptably accurate. If, however, these observers had a standard test of dependability, they could give such a test and obtain a reasonably accurate observation about this student within a period of 45 minutes.

Although certain traits cannot as yet be measured by standardized tests, many other characteristics can be so measured. Such traits include "scholastic aptitude," "finger dexterity," or "typing speed"; these are traits that can be estimated only crudely by non-test methods.

The problem then is to decide which aspects of behavior can best be measured by tests, and which by other observational methods. The problem is *not* to decide whether to employ tests or to get along without them.

Tests as Aids to Judgments. A teacher or counselor must make judgments about students; this is true whether or not standardized tests are used. If he employs tests, however, he will be able to make observations and judgments which have a greater degree of accuracy or *reliability*, meaning or *validity*, and *relative significance* than otherwise. He will be better able to see students both as individuals and as group members engaged in the co-operative and competitive situations of daily living.

As one example, take the case of John. Miss Jones, the high-school history teacher, says that John is a *dull* youth. How *reliable* is her judgment? Do other teachers characterize John as dull? Would Miss Jones classify him as dull if she could see a larger sample of his intellectual behavior in her own field of knowledge? How valid is Miss Jones's judgment? Does she mean that John cannot learn her subject or any other subject? Does she mean that John will never be able to graduate from high school? In labeling John as dull, is Miss Jones overlooking the fact that he is failing to respond to her perhaps because she has not brought out his possibilities? What is Miss Jones's *norm group* with which she is unconsciously comparing John? Does she mean that he is the dumbest student in her class of thirty or among the dumbest 10 percent of the 100 students in his grade? Or does she mean that John is below the average of students in the last school in which she taught?

As another example, consider the case of Harry. One teacher states that Harry is her *best* student in English. Is Harry best in a poor class, an average class, or a good class? Is he best because he writes "interesting" themes? Is he best even though his written English is mechanically only average? Is he best because he has such a delightful personality and is "no trouble in class"? Does "best" mean that he is good enough to get better than average grades at the near-by state university?

As still another example, look at the case of Robert. The teacher calls him *radical*, claiming that he's always "stirring up

trouble." What are the teacher's own leanings? If the teacher is extremely conservative, Robert's alert questions in social science class and his aggressive participation in student government may seem the essence of radicalism; but Robert's behavior might be more accurately described as coming from a well-informed and intelligently critical child. Further, Robert's liberalism, or so called "radicalism," may be limited to one field; he may be genuinely conservative in other fields, such as religion and relationships with members of the opposite sex.

These cases raise many questions about the *reliability*, the *validity*, and the *norms* of judgments that are based upon non-test or descriptive observations. A judgment derived from a test or a non test observation of the student can be no better than the reliability, validity, and frame of reference or norms that characterize the test or non test situation in which the student is observed. A test is no more or less than one kind of situation in which to observe the student's performance. It happens to be a situation whose accuracy and meaning can be directly studied by **statistical methods**.

Because tests have been developed by statistical and other scientific methods, many tests are perfected to the point where their use makes an important contribution to understanding an **individual student**.

The competent counselor, as Chapter 18 will point out, draws upon many sources of information when he works with a student. Specifically, this counselor reviews the student's cumulative record and talks with his teachers. He examines the student's personal data blank or autobiography. He looks at the student's health record and at his records of extraclass and out-of-school activities. Often, he consults with the student's parents or others who know what the student is like when away from school. And, of course, the counselor conducts interviews with the student. All these activities are part of a total process which leads to an understanding of the student.

At many times and places in this total process, the counselor finds that test scores are useful items of information. That is why he turns to tests for clues which may help solve the problems of an individual student. Yet tests are primarily the tools of the skilled worker in human relations; they yield information

that is particularly helpful when it is combined or compared with information obtained from other sources and by other techniques.

A two-edged tool. What is more, tests are tools which can be either useful or harmful in their application. Like another tool, a hammer, a test in proper hands is an effective instrument of craftsmanship; but in other hands it is a weapon of mutilation and even destruction.

If tests are to contribute effectively to the process of understanding the individual, they must be used by "proper hands." To use a test well, the counselor must know, as a minimum, the statistical concepts and procedures presented in Chapters 2 and 3 of this book. The greater his statistical knowledge, of course, the greater his competence in test interpretation. In addition, the counselor who is a capable test user must be familiar with the logic of the problems involved in measuring, predicting, and guiding human behavior.

As indicated already, tests should be used only by persons who can competently handle them. This statement leads to an important corollary: Since the test competency of guidance workers varies from individual to individual, it follows that the role of tests in a guidance program handled by one individual may be quite different from their role in a program directed by another individual. Although the two programs differ, ideally each will make maximum use of the competencies of all the guidance workers concerned. And equally important, neither will place students in jeopardy of the misuse of tests.

WHAT ARE THE BASIC IDEAS IN MAKING AND USING TESTS?

Although each guidance testing program must be built around the competencies of the persons who conduct it, all programs have the common objective of understanding the individual. All guidance testing programs should also operate in accordance with certain basic ideas or principles that are discussed next.

1. *A test is never anything more than a short, standardized sample of an individual's behavior.* It is short, requiring only a few minutes, or at most a few hours to administer; there is

usually a limited time available for test purposes. It is standardized—that is, the conditions under which it is to be given are carefully prescribed, and the expected results have been statistically demonstrated in the process of test construction. And finally it is a sample measuring only a limited and representative cross section of the individual's behavior.

Life is full of test or tryout situations. A crossword puzzle or a jigsaw puzzle is potentially a test. The first period on a new job is a test. A boy's tryout for the school football team is a test. A girl's first date is a test. And the teacher's classroom examination is a test.

In each of these illustrations, the test consists of a shorter or longer sample of a person's behavior. On the basis of this sample, some kind of judgment is made about that person by the observer. In watching a person solve a crossword or a jigsaw puzzle, the observer usually makes the simple statement that in his judgment the person did well or poorly in the activity. It is possible, however, for the observer to make a deeper judgment of the quality of the person's performance. Thus, he might state that the person showed good vocabulary skills in the speedy way he finished the crossword puzzle; or that the person demonstrated good space perception in the rate and accuracy with which he assembled the jigsaw puzzle.

For the boy who is trying out for the football team, the coach's judgment is most vital of all. While observing the boy in practice, the coach is deciding whether the youth has the complex behavior patterns which, with training, will enable him to make the first team. These patterns include physique, motor co-ordination, strength, speed, "guts," "football brains," and team spirit. The coach then sums up his judgments of the boy's complex pattern by saying that he is good material or a fair prospect, or by saying that he is too light to make the team.

In most life situations, achievement involves quite complicated types of behavior which interact to produce some unified result. School achievement as indicated by marks involves scholastic aptitude, motivation, study habits, subject-matter skills, personality, freedom from worry, and other traits, all operating together within the individual.

The test-maker has found that he can get farther in studying human behavior by testing each trait separately and by assembling the knowledge of traits thus obtained into a general picture or pattern. Therefore, the test-maker tries to identify separate traits in an individual and to develop tests to measure these traits. In each trait, he takes samples of behavior; he then incorporates these samples in his tests. When he gives one of these tests, he is sampling behavior to measure a certain trait. He is, in fact, using sampling methods in much the same way a sample of grain is tested to judge the whole carload.

2. *A test should have been administered to an adequate sample of the population.* Up to this point the discussion of tests has been concerned with a *sample* of a certain kind of behavior displayed by one person. The discussion now turns to a consideration of a *sample* of the population possessing the behavior in various amounts as used in the standardization of tests. In Chapter 3 it was pointed out that the test-maker usually finds it impossible to study *all* the people in a population; therefore, he has to take samples of people from that population for study. These two concepts, the sampling of behavior and the sampling of population, must be tied together.

The test-maker *samples* a certain kind of behavior, for instance, spelling ability or manual dexterity, as this behavior is found to exist among individuals in a *sample*, say, of 5,000 ninth-grade students. The user of the test must know the kind of behavior sampled and the performance of the persons making up the sample population on which the test was standardized. With this knowledge, he can compare an individual's test performance with that of the sample population.

Devices which aid in making such comparisons were presented in Chapters 2 and 3 on statistical methods for constructing and interpreting tests. *Percentile scores* were described as one statistical device for stating where a person's score ranked relative to the scores made by other persons in the sample of the population. The *mean* and the *median* were shown to be convenient devices for locating the most usual or typical levels of test behavior among a particular group of persons. The *standard deviation* was presented as a way of indicating mathemati-

cally the variation or spread of scores made by that same group of persons.

3. *A test should have relatively high reliability.* In selecting tests for guidance work, the counselor will ask: "How can I be sure that this test is sampling a trait accurately?" Or said another way: "How can I be sure that this test is an accurate yardstick?" In measuring height, for example, it is assumed (a) that the yardstick or scale is both accurate and stable and (b) that the trait being measured is clearly identifiable and commonly understood. Such measurement of human structure, however, is less difficult than the measurement of human behavior. That is why the test-maker must carefully study the accuracy of his test. And he does this by applying the logic of correlation coefficients to his test scores.

The test-maker assumes that his test has precision or accuracy if it yields two consistent sets of scores when administered twice to the same persons. In other words, suppose that the students in a class are given the same test twice and that their scores on each testing are ranked from high to low. If their ranks on the second testing are about the same as those on the first testing, that test is assumed to be relatively accurate or reliable. Because this test is relatively reliable, the student's first score is a good predictor of his second score.

To determine mathematically the relationship between the two sets of students' scores on the same test, the test-maker employs the *coefficient of correlation*. This index shows the relative accuracy or *reliability* of the test. If the coefficient is .90 or higher, the chances are excellent that a student will achieve the same relative rank *both times that he takes the test*. It is logical to expect that if the same test is applied twice to another group of students, the two sets of scores obtained will be highly correlated statistically.

The test-maker, however, cannot always give his test twice to exactly the same group of persons. In this event, he can employ a statistical device whereby he splits his whole test into two equal parts. For each student in the given group he then has two part-scores. Next he correlates the pairs of part-scores made by the group, thus securing a coefficient which can be used in determining the reliability of the whole test.

The descriptive manuals which accompany nearly all standardized tests usually report reliability coefficients of correlation as follows: test-retest reliability; or corrected odd-even reliability. "Test-retest" means that the whole test was given twice. "Corrected odd-even" means that the test was given once, that two part-scores were obtained (the one from the odd-numbered items and the other from the even-numbered items); that the two part-scores were correlated; and that the coefficient thus secured was "corrected" by a special formula to get a coefficient of reliability for the whole test.

As an arbitrary guide, the guidance worker should buy a test only if its reliability coefficient is .80 or higher. He can readily do this because most of the standardized tests on the market have coefficients which are in this range.

A reliable test not only ranks students in approximately the same order when that test is given to the same group twice; it also may yield two scores that are closely similar for the same student. If a student is tested an infinite number of times with a reliable test and under the same conditions, what scores will he make? In all probability, these scores will not be exactly the same; rather, they will vary to some extent. But, if these scores are averaged, the average thus obtained will represent the best available measure of the student's performance on the test. Stated another way, the more reliable the test is, the smaller is the range of scores that will be obtained by a given student if he were to take this same test again and again. Thus, a reliability coefficient can tell not only how consistently the student will maintain the same relative standing within his group but also the range of variation in scores which he will make when he takes the same test two or more times.

4. *A test should have comparatively high validity.* A test may include tasks which adequately sample one trait or aspect of human behavior. A test may be standardized on a representative sample of the entire population. A test may measure a particular trait accurately or reliably. But the question remains, "Does this test measure what it purports to measure?" In short, "Is this test valid?"

In determining the validity of his test, the test-maker tries to ascertain exactly what his test measures—that is, the trait

measured and its meaning in terms of the current and long-term behavior of the individual. In measuring height or weight, a person uses a yardstick or scales. He knows precisely the trait he is measuring; he knows that his instrument (test) is measuring that trait; and he knows the meaning of the measured trait. However, in measuring human behavior, how does the test-maker know that 'Test A is a good test of intelligence or that 'Test B is a good test of emotionality or that 'Test C is a good test of vocational interests?

In certain tests of human behavior, the test-maker has relatively little difficulty in identifying what he is measuring and its significance. A test in general science, mathematics, English, or typing speed usually measures what its name says it measures, therefore, the meaning of such a test is fairly clear-cut. Through comparing the items of the test with the items taught in a given course, the test-maker can ascertain whether the content of the test and the content of the course correspond reasonably well. If this correspondence is close, he can rightly say that this test has high "face validity."

Using correlational techniques, the test-maker can also find out, for example, the extent to which a student's score on a general science test in the ninth grade can be used to predict that student's final mark in chemistry in the eleventh grade.

Unlike the foregoing, many tests are not so directly or immediately related to the achievements which the typical school seeks to develop. Nevertheless, the value of such tests can be demonstrated through the use of statistical techniques, particularly, coefficients of correlation.

For purposes of illustration, consider three tests: a test of scholastic aptitude; a test of clerical aptitude; and a test of finger dexterity. Each of these tests has been found to be reliable or accurate. But what is its real value or worth? As criteria of a test's validity, the test-maker selects real-life situations in which the measured abilities called scholastic aptitude, clerical aptitude, or finger dexterity appear to be important contributors to satisfactory adjustment or success. In the three examples cited, such situations might include, respectively, later schoolwork, bookkeeping or accounting jobs, and typewriter repairing. In each of these three real-life situations, the test-maker develops

criteria to indicate an individual's relative competence. He may, for instance, use such criteria as later school grades, the speed and accuracy of bookkeeping entries, or supervisor's ratings of typewriter repairing skill. Each of these constitutes a measure of success in a real-life situation. By correlating a student's score on a test of scholastic aptitude, clerical aptitude, or finger dexterity with his level of performance in the appropriate life situations, the test maker is able to determine the validity or real value of each of his tests.

If the test scores correlate highly with the criteria of real-life success, the test is a good instrument for predicting real-life success. In other words, the test is measuring abilities that are important to later school grades, to bookkeeping proficiency, or to typewriter repairing skill. Because correlations between scores and criteria are among the best indicators of the validity or *meaning* of tests, the counselor should always look for such correlations in the descriptive manuals which accompany tests. In general, he will find that the coefficients of validity (test vs. criterion) are lower than the coefficients of reliability (test vs. retest). Because of the difficulty of getting accurate measures of real-life success, the validity coefficients for tests are usually found to range from about .35 to about .60. These coefficients are sufficiently high to be of value in guidance work.

Another way to look at a test is to consider that the test is a short tryout for a longer tryout, later. The validity coefficient indicates how well the test predicts success in this longer tryout process. Assume that a mathematics test in high school correlates highly with mathematics grades earned in engineering college. Then, if a student who wants to enter engineering is low in the high-school mathematics test, this test score should certainly be a caution signal to him. If his low mathematics score is confirmed by other data such as low marks in this subject, this information should be a danger signal to him. The odds are that this student is not likely to succeed in the real-life situation presented in an engineering college. As a result of taking the high-school mathematics test, he may rightly decide to choose another career. Thus, the short tryout of a test helped him avoid the failure he would have almost surely experienced had he gone through with his original long-term plan.

Summing up, to find out what any test is measuring, find out what real-life situation the test-maker used to validate his test. Then find out how well his test correlated with his measures of adjustment or success in that real-life situation. What the criteria were and how well the test correlated with these criteria both must be known to determine how valid the test is. Such information is always contained in the manuals of good tests.

Use of the Significance of Differences. In testing personality, attitudes on current social problems, or occupational interests, however, it is not always possible to find a quantitative or numerical measure of such behavior in real-life situations. Therefore, it is often necessary to determine the meaning or value of a test in another way, a way that involves the statistical method of assessing the significance of the difference between groups. (This method was discussed briefly in Chapter 3.)

In regard to personality traits, people commonly speak of others as being "poorly adjusted" or "well adjusted," "shy" or "gregarious," "worried" or "calm," "poised" or "awkward," "introverted" or "extroverted." In attitudes, they talk of "liberals" or "conservatives." In other words, people often classify others as belonging to one of two types or groups. As a matter of fact, those so classified might be more accurately rated on a trait scale that ranges, for example, from "very poorly adjusted" to "extremely well adjusted." Nevertheless, a test-maker may employ the popular two-fold classification to validate a personality test.

A psychologist who is preparing a personality test includes items which he thinks will discriminate between "poorly adjusted" students and "well adjusted" students. He then gives this test to a group of students rated as "very poorly adjusted"; also to a student group rated as "extremely well adjusted." He next analyzes the differences between the two groups in their responses, item by item, and in their total scores on the test. If the average scores made by these two groups differ significantly, he concludes that his test is a good measure of a student's degree of adjustment. Such average scores and their significance are always reported in the manuals of good tests of personality.

These three concepts—sampling, reliability, and validity—

are basic ideas that the counselor should understand in order to select and use tests wisely. If the reader is not sufficiently familiar with the essentials of statistical methods which undergird these concepts, the authors encourage him to turn again to Chapters 2 and 3. He may also read some of the reference books cited at the end of this chapter.

HOW SHOULD TESTS FOR GUIDANCE USE BE SELECTED?

Fortunately, the prospective test-user does not need to compute the statistics required to determine the sampling adequacy, reliability, or validity of each test under consideration, because the test-maker has already done so. Test publishers nearly always provide such information in the manuals accompanying their tests. The test-user should carefully study these manuals before selecting a test for guidance purposes. He should also examine that test closely. Ordinarily a test publisher sells a "specimen set" made up of a test manual, a single copy of the test, and a scoring key, all at a nominal price.

What should the guidance worker look for when he studies a test manual? Reliability, validity, norms, practicality—these are the four main test features about which he should ask questions, questions which the manual should answer.

1. *Reliability.* Are the test-retest or corrected odd-even or split-half reliability coefficients of correlation reported in the manual for this test at least .80? Were these coefficients calculated for a group of persons similar in age, sex, and background to the persons whom the counselor plans to test? The counselor should be able to answer both these questions affirmatively before he decides to use that test in his guidance testing program.

2. *Validity.* Does this test measure something that is important to know about students? Are the validity coefficients of correlation within the range of .35 to .60, preferably nearer the upper end of this range? Is the criterion of success which was used in obtaining these correlation coefficients meaningful in terms of the information desired about the counselor's students? If validity coefficients are not available, is there adequate evidence of validity in the form of critical ratios? Or, are other statistics available which indicate that the test will distinguish

satisfactorily between groups of people who are at the opposite extremes in the trait purportedly measured? Can the student to whom the test is to be given be considered, now or later, as a member of the criterion group or groups on which the validity coefficients were based? These questions should be answered in the test manual. Only if the answers are satisfactory should the counselor consider that test an acceptable guidance tool.

3. *Norms.* Has the test been given to a large enough sample of students similar in age, sex, and background to the students who are to be tested? Has the test also been given to a large enough sample of people with whom the counselor's students are now competing or will later compete? If both of these questions are answered, "Yes," it is likely that the manual has appropriate norms for interpreting test scores.

The next question to ask is: What kinds of norms are available for the test? Are these norms in the form of percentiles, grade levels, and age levels, or of standard scores?

In planning his testing program, the counselor will find it desirable although not essential to select tests all of whose norms are stated in the same form—for example, percentile norms. If the norms of several tests are based on comparable groups, he is able to compare directly a student's percentile standing on one test with his percentile standing on another.

It is unfortunate but true that one test may have norms only in percentile form; another test, only in grade form; and still another, only in age form. This variation in norms is confusing to the counselor, and even more to the student he is counseling. For example, note how difficult it is to counsel with John, age 13.5 and in the eighth grade, when the norms show that he is at the 78th percentile for his grade in scholastic aptitude, at grade 9.7 in reading ability, and at age 14.9 in mathematical achievement.

Whether or not a test has norms and whether or not the norms for one test are comparable to those for another test, the counselor may wisely decide to prepare his own norms for a given test.¹ Using these norms, he can compare a student's

¹Simplified methods of constructing percentile and standard score norms are described in Appendix B of *Guidance Testing*, by Clifford P. Froehlich and Arthur L. Benson, published in 1948 by Science Research Associates.

test score with the test scores of other students in the same class or grade within a school or school system. This possibility is often overlooked by test purchasers and users.

As a matter of fact, and this is particularly important, the counselor will find that the best procedure is to set up local norms—norms derived from his own school or school system. If the counselor does this, he can compare these local norms with published norms, based on test scores obtained from a school population that is usually large and widely distributed.

4. *Practicality.* If the test has a time limit, is it short enough so that the test can be completed by nearly all students within the usual classroom period; if not, can the test be stopped and started again later without affecting the results adversely? Most schools find it desirable to select tests which can be completed entirely or part by part during regular class periods. In considering the time necessary for a test, the counselor must be sure to include the time required for giving instructions, for distributing and collecting the test booklets, and for other details involved in test administration. The counselor must also consider the time required to score the test, to record scores, to transmute scores into percentiles or other equivalents, and to interpret the results.

Regarding practicality, the counselor must, of course, consider the cost of the test. There is a great range in the price of tests and the most expensive tests are not always the best. In deciding which test to buy, the counselor must weigh such factors as price, quality, usability, and administration and scoring costs.

Another matter bearing on the practicality of a test is the form on which the answers are to be recorded. Must a new test booklet be provided for each student? Or does the test have separate answer sheets already prepared? Are these answer sheets available at low cost? Can answer sheets be duplicated by the school?

In this connection, it should be noted that most test publishers now sell test booklets in two forms. One form of the test is consumable—is used up by one student. The other form of the test is re-usable. The latter may have separate answer

sheets in two forms. One form is hand-scored, sometimes with the use of a stencil. The other form is machine-scored.

Separate answer sheets provide real savings in the funds otherwise necessary for a testing program. Suppose, for example, that a counselor decides to use a test costing six cents. He plans to give this test to 100 students. Therefore, if the test booklet is usable only once, he will have to spend six dollars for the 100 booklets required. Suppose, however, that he can buy or duplicate answer sheets for two cents each or less. Suppose also that he can spread out his testing so that he tests the 100 students in groups of no more than 20 students each. He will then need to buy only 20 tests and 100 answer sheets. His total cost will be \$3.20 (\$1.20 for 20 tests and \$2.00 for 100 answer sheets). He saves \$2.80, the difference between \$6.00 and \$3.20.

The scoring of tests frequently presents a problem in terms of the time, effort, and money required. Fortunately, in recent years test publishers have made many advances in the simplification of scoring procedures. These procedures are usually described in detail in the test manual. To see what the exact scoring procedures are for a given test, the counselor will find it highly desirable to try them out by taking and scoring the test that is furnished in the "specimen set." If the counselor has a sizeable number of answer sheets to score, he should explore the advisability of having them scored by machine. This service is available at many college and guidance centers; they will usually machine-score tests for a nominal fee. In most states these centers can be located by writing to the State Supervisor of Guidance Services in the State Department of Education.

All test manuals should contain information which can be used as a basis for judging a test on the four points of reliability, validity, norms, and practicality. Unfortunately, some manuals do not provide this information. If this is the case, the counselor may be able to obtain the information by writing to the test publisher.

The school which starts a guidance testing program without checking on the reliability, validity, norms, and practicality of tests *before* it buys these tests may find that it has unnecessary test costs and is experiencing needless confusion in test handling

and interpretation. If the school shops around for tests and examines them critically in advance, it will effect considerable savings in its testing program, not only in money but also in time and effort.

WHAT KINDS OF TESTS ARE AVAILABLE?

Tests can be classified in three ways: the type of behavior being measured; the type of material or equipment needed; and the time-limit or work-limit conditions of administration.

The types of behavior which tests measure, as mentioned earlier, include general scholastic ability; special aptitudes or disabilities; subject matter or trade achievement; vocational interests; and personality and attitudes. With minor modifications, these are the basic types of tests available for administration to students.

In terms of material or equipment needed, there are two broad kinds of tests: paper-and-pencil tests and performance tests. Paper-and-pencil tests are usually inexpensive and can be administered to a group of students. Performance tests usually require expensive equipment and individual administration. A paper-and-pencil test or a performance test may be given as a time-limit test, where the working time is set—or as a power or work-limit test, where the student works until he completes the task at hand or can go no farther with the task.

Publishers and distributors have more and more taken over the sale and distribution of many standardized tests. As they have done so, certain features, good and bad, which characterize a competitive marketing situation have become a part of the testing field. The companies, of course, usually pay royalties to the authors for their work in preparing and standardizing their tests. The companies try to develop a "line of tests" and to sell their line widely; in doing so, they endeavor to compete successfully.

The main factors controlling the quality of a standardized test offered for sale are the conscience of its publisher in distribution, and the competence of its author including his skill in test construction and his sensitivity to the criticism of his colleagues. Even so, some tests on the market are below standard in quality. This may be due to the fact that all too many buyers

and users of tests are still relatively untrained in test theory and practice. It may also be due to the lack of uniform minimum standards of quality control such as exist in the field of drug manufacture and sale. With reference to tests, the American Psychological Association has recently prepared a statement concerning the ethics of test distribution.²

Among test-users, buying habits grow up much as they do among other types of purchasers. Because of these habits, test-users tend to buy Brand A rather than Brand B or Brand C. Actually there may be about as little difference in quality or price among three good achievement test batteries as there is among three good automobiles in the same price group. Yet a particular test battery is purchased because of such factors as personal preference, familiarity with the test, or sales pressure—factors that have little or no relationship to the combined values of the test itself.

Just as there is no standard guidance program in all schools, so there is no standard testing program adapted to all schools. A school may begin its guidance testing program by introducing only one type of test, such as a good achievement test or a good scholastic aptitude test. As this school becomes familiar with the test and its use, it adds other types of tests. The school also moves in the direction of early testing of all new students so that the information thus gathered will have the maximum usefulness.

In general, the beginning counselor should introduce tests and testing procedures gradually. In the early steps of his work, moreover, he should steer clear of the more difficult types of testing, such as personality measurement. Thus such a counselor will be on safer and happier ground, not only in terms of his own understanding, but also in terms of his relationships with students and co-workers.

WHAT IS A MINIMUM GUIDANCE TESTING PROGRAM?

A guidance testing program must be planned in terms of the material and personnel resources available in the total

²A.P.A. Committee on Ethical Standards for Psychology. "Ethical Standards for the Distribution of Psychological Tests and Diagnostic Aids," *The American Psychologist*, V (November, 1950), 620-626.

guidance program. Because these resources are usually limited, a guidance program which is just being organized should probably not include tests, questionnaires, or records covering all of the seven important aspects of the student's life discussed in Chapter 1. These aspects, it will be recalled, are scholastic ability, past achievement, aptitudes and disabilities, interests, personality adjustments, health, and family background. Which of these aspects, then, should be given first consideration in a beginning guidance program?

It should be recognized at the outset that a guidance testing program is sound only when it is an individual program for each student. An example will clarify the point. In any high school, there are a few boys and girls who are considering further schooling in art. In counseling with these students, the counselor finds that he should obtain the results of an art aptitude test. Because only a few students want and need this information, the counselor gives the art aptitude test only to these students, not to all students in his school. Thus he follows the wise policy of administering a test only to those students who can benefit from its results.

In line with this same policy, the counselor recognizes the need for some estimate of the level of achievement of all boys and girls entering a high school. Likewise, he recognizes the need for an estimate of their scholastic ability. He requires these estimates if he is to work effectively with them in planning their programs. In the light of the needs just mentioned, is the counselor justified in giving all entering students achievement and scholastic ability tests? The answer is obviously "Yes." Such tests have great potential usefulness for all students. And this is true even though the test is a so-called "group test," for "group" refers to the way in which the test is administered, not to the way it is used. A test's most important use, of course, is in guiding the individual student.

If testing must be planned individually for each student, does it make sense to speak of a minimum guidance testing program—that is, of a program in which all entering students are given the same achievement test and the same scholastic ability test? The answer again is "Yes." This answer, of course, is based on the fact that certain kinds of tests have potential

usefulness to almost all students. Because the probable usefulness of results from achievement and scholastic aptitude tests is fairly well known, a school is justified in including them in a group testing program designed to meet later the needs of individual students.

From the experience of a great many schools, there is consensus that three kinds of tests are needed for working with nearly all students. These are tests of achievement, of scholastic ability, and of interests. In guidance work, the results of tests of these three types are most frequently of value. Therefore, the typical school finds it desirable to administer such tests to all its students. This school, moreover, finds it more economical to give these tests to all its students than to give these tests to an individual student as the need arises.

Subsequent chapters will present the detailed reasons for proposing that achievement, scholastic ability, and interest tests be included in a minimum guidance testing program. At this point, however, it is important to consider another question related to the minimum testing program: When shall these tests be given? There is no universal answer, because conditions vary from school to school. In general, however, it is wise to test when students are about to begin a new phase of their schooling. At these times, the need for evidence upon which sound judgments can be made is particularly acute.

Here is a list of points at which students typically enter a new phase of school: (a) entering the first grade; (b) completing the third or fourth grade; (c) leaving elementary school for junior high school; and (d) beginning senior high school. At these points, the need for test data is greatest. Such data are also needed when the student is planning for life after he leaves school, whether he leaves through dropping out or through graduation.

At each of these points except the first, it is well to have evidence gained from scholastic ability and achievement tests. When the student enters the first grade, he can be given a test of reading readiness, which in one sense is an achievement test. When the student is in senior high school, he can profitably take a test of his interests. As yet, unfortunately, there are no tests which measure adequately the interests of students typi-

cally found in the junior high school. Among these students, however, some are mature enough to take and benefit from an interest test designed for senior high-school students.

SUMMARY

In summary, the minimum testing program should be designed to meet the needs of individual students. Because they have needs that are common and that can be anticipated, it is both possible and desirable to test these students in groups. The test results, of course, should be used in working with students individually.

The testing program should include three types of tests—achievement tests, scholastic ability tests, and interest tests. These tests yield evidence that is essential in determining students' progress and in guiding students' plans. One or more of the foregoing types of tests should be given to a student when he is entering a new phase of his schooling. These suggestions are based on the assumption that guidance testing is a means of helping students, not an end in itself

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Measuring Scholastic Ability

IN THE seven areas in which information about individuals must be collected, as given in Chapter 1, scholastic ability was listed first. This should not be interpreted to mean that it is the most important area. Its relationship to other areas in contributing to a picture of the individual is similar to that of one piece to the rest of a jigsaw puzzle—all are needed to obtain the complete picture. Nevertheless, judgments concerning a student's scholastic ability are made more frequently than judgments about other areas of his behavior. Unfortunately, judgments of scholastic ability are at times based on very inadequate evidence.

WHAT IS SCHOLASTIC ABILITY?

The term "scholastic ability" is used synonymously with such terms as "scholastic aptitude," "academic aptitude," "general intelligence," and "mental ability." For this human quality there is as yet no standard terminology. While this may be somewhat confusing to the beginner in the guidance testing field, it should not be a matter of great concern to him. The important point to recognize is that however scholastic ability is designated, evidence concerning an individual's intellectual functioning must be gathered if he is to be understood fully or to be helped effectively.

Since the turn of the century, psychologists have been engaging in efforts to define these intellectual functions. They have often described intelligence as the ability of an individual to adjust to his environment. As frequently, they have described intelligence as a person's ability to learn from experience.

Although both descriptions are good, they are rather general. In fact, discontent with these general concepts led to the introduction of the term "scholastic aptitude"—defined as the ability to learn in the tasks required in school or, more specifically, as the ability to learn from books.

Garrett, in his presidential address to the American Psychological Association, defined intelligence as "... the abilities demanded in the solution of problems which require the comprehension and use of symbols."¹ He then pointed out that the essence of his definition had been propounded many years earlier by such pioneers in mental measurement as Terman and Thorndike. Garrett's description of intelligence, which departs from those cited earlier, has operational significance for guidance workers because it accurately describes a meaningful criterion of intelligent action—the ability to use symbols in problem solving.

In his address, Garrett also pointed out "... that the measurement of intelligent behavior began as a practical enterprise and that theory has in general followed rather than preceded application. Perhaps had theory come first, we might have been saved much argument and many intelligence tests. . . . By actually measuring intelligence, however crudely, psychologists have been forced to set up theories in order to interpret what they have found. And eventually the impact of theoretical discussion has led to a better notion of what one is attempting to measure."²

WHAT IS THE BINET SCALE?

Garrett's description of the interplay between practice and theory in the development of intelligence tests was excellently demonstrated in the work of Binet. Binet was faced with a practical problem. He had been asked by the schools of Paris to devise some means of identifying the feeble-minded children so that they could be segregated from the rest of the pupils. The school officials did not want to rely solely upon teacher judgments because they realized the possibility of errors in these

¹H. E. Garrett, "A Developmental Theory of Intelligence," *The American Psychologist*, I (September 1946), 372.

²Garrett, *op. cit.*, p. 373.

judgments. In identifying the feeble-minded, the school officials were looking for a method which would not be influenced by the tendencies of teachers, for example, to underrate the intelligence of the classroom trouble-maker or of the unattractive child and to overrate the intelligence of the obedient child or of the child with the pleasant personality.

In collaboration with Simon, Binet devised his intelligence test in 1905, and revised it twice—in 1908 and 1911. In 1916, Terman, a professor at Stanford University, revised this test for use in America. He designed his revision for children of average and superior intelligence as well as inferior mental ability. Subsequently, Terman and others made further revisions of the Binet test. These revisions improved its method of administration, its items, and its standardization. Nevertheless the latest revisions incorporate basic ideas that are directly traceable to the original Binet scale and Terman's first revision of it. The Terman revision is frequently called the "Stanford-Binet."

What are the basic ideas in the Binet scale? The first basic idea is that, *as a child matures intellectually, he is able to solve more complex problems*. Thus, the test is a scale composed of a variety of problems grouped according to successive age levels which correspond to levels of difficulty. For instance, Terman's 1937 revision of the Binet scale includes such items as these: At the four-year-old level the person being tested is asked, "Why do we have houses?" and "Why do we have books?" At the adult level, the person is directed to "Give three reasons why some people use typewriters which cost so much when they could get pen and ink for a few cents," or "Give three reasons why a man who commits a serious crime should be punished."³

At each age level (for the years covered by the test), this test has a set of problems which the typical person at that age can solve. For example, assume that a child of age four is being tested. If he is able to solve the problems typically solved by the four-year-olds on whom these problems were standardized, he is said to have a mental age of four. If he can solve problems

³Lewis M. Terman and Maud A. Merrill, *Measuring Intelligence* (Boston: Houghton Mifflin Company, 1937).

ordinarily solved by five-year-olds, his mental age is five. But if he can only solve problems typically solved by three-year-old children, his mental age is three.

Even though this basic idea appears simple enough, it made possible a yardstick for measuring mental ability. This was one of Binet's principal contributions to the field of mental testing. The divisions on this yardstick, it should be repeated, are in terms of the average or typical performances of persons at successive chronological ages.

The second basic idea in Binet's scale is that *intelligence can be inferred from behavior*. For years, scientists in other fields have studied "behavior" in order to measure it. As a result of research, for instance, physicists can measure the BTU's in a lump of coal by burning it; they can measure speed of sound by timing it. Thus, they make measurements by directly observing a particular phenomenon. But the phenomenon known as intelligence cannot be measured so directly. There are no thermometers for measuring intellectual BTU's or watches for recording the speed of intelligence. Rather, intelligence must be inferred from behavior. And this is what Binet did. He developed a series of problems through which the person tested had a chance to behave under controlled conditions. The person whose behavior showed he could solve more complex problems was judged to be more intelligent than the person who could not. Note that Binet did not measure intelligence directly. Instead, he inferred intelligence from the behavior he observed.

WHAT IS THE MEANING OF THE I.Q.?

As just presented, the concept of mental age and the concept of inferred intelligence are ideas which are basic to understanding the I.Q., or intelligence quotient, which is derived from such tests as the Binet and its descendants. Because the so-called I.Q. is probably one of the most misunderstood concepts in psychology and teaching, it deserves a brief explanation here.

Arithmetically, the I.Q. is computed by this simple formula: $I.Q. = M.A. / C.A. \times 100$. In this formula, M.A. represents the mental age and C.A. represents the chronological age. The child's chronological age (C.A.) is his actual age at the time

of testing. The child's mental age, as already pointed out, is determined by his performance on a test. In the Binet test, for each age level there are carefully selected problems or other items that children of that age can pass. Thus, a child who passes as many items as the average child of age seven has a mental age (M.A.) of seven.

If a child has a mental age of seven and a chronological age of seven, his I.Q. is $7/7 \times 100$, or 100. If he has a mental age of seven and a chronological age of five, his I.Q. is $7/5 \times 100$ or 140. If he has a mental age of seven and a chronological age of nine, his I.Q. is $7/9 \times 100$, or 78.

The chronological age is an *absolute* measure of time since birth. The mental age is an *absolute* measure of the child's mental ability. But the I.Q. is a *relative* index of mental ability. It permits the test-user to compare a child's relative mental ability with the relative mental abilities of children of the same or of different chronological ages. Thus, the I.Q. can be thought of as an index of a child's brightness. In general, moreover, the I.Q. can also be thought of as an indicator of the *speed* with which that child learns.

In considering the I.Q., two general cautions are necessary. First, an I.Q. must be derived from a test which has been given by a competent examiner. Individual tests, such as the latest revision of the Stanford-Binet test, can be given accurately only by an examiner who has been trained under careful supervision to give this test. Because the Binet test is of an oral interview type, it can easily be mishandled by an unskilled or unqualified examiner. As a result, he may obtain an I.Q. that is grossly inaccurate. Second, an I.Q. must be based on a valid test. The I.Q.'s reported on some intelligence tests are relatively worthless because these tests have never been checked against a valid criterion such as the Stanford-Binet test.

During World War I, the large-scale and rapid testing of draftees was imperative. Therefore, psychologists devised short-answer paper-and-pencil tests which could be used instead of the time-consuming individual tests such as the Binet. After that war, it was possible to have the same persons, either adults or students, take both the paper-and-pencil test and the Binet. The scores and mental ages thus obtained were then compared

and a table of equivalents was drawn up. Using this table, it was possible to say that if a person made a score of 50, for example, on the paper-and-pencil test, his mental age was about 13 years and 6 months on the Binet.

Since 1920, psychologists have developed group tests which contain items different from those appearing in the Stanford-Binet. They have given these tests to thousands of children and used the scores thus obtained to relate a certain score to a certain mental age. These test-makers have then used the arithmetical technique presented earlier to compute an I.Q.

With reference to such an I.Q., it is necessary to ask several questions before judging its significance. Is the I.Q. derived from the group test a valid measure? Was the test checked against the original or the revised Stanford-Binet? If so, the I.Q. is probably a good index of scholastic aptitude—it indicates the ability of a student to learn.

If the group test was checked against an individual test such as the Stanford-Binet or the Wechsler-Bellevue Intelligence Scale, does the group test yield I.Q.'s which are comparable to those obtained by giving the individual test? In this connection, it should be noted that, for each chronological age, if the coefficient of correlation between I.Q.'s derived from the group test and the Stanford-Binet test is .80 or higher, then the group test may be assumed to be reasonably satisfactory as an estimate of scholastic aptitude.

WHEN IS A NON-VERBAL TEST USEFUL?

Is the group test a time-limit test in which reading speed is an important factor in determining a student's score? Or, is the group test a work-limit test in which a student has all the time he needs to reach his top performance? Unless the test is the latter, the factor of speed may be so important that the score will not as adequately reflect mental ability as will the mental age revealed by the Stanford-Binet or another individual test.

For some years, psychologists have recognized that a student may make a lower I.Q. on a group test than on an individual test because that student has a reading difficulty or some other deficiency. Some psychologists have called this a serious

limitation of many mental ability tests, particularly of group paper-and-pencil tests made up largely of items of a verbal or reading type. Toward correcting the situation, these specialists have constructed so-called "non-verbal" tests to measure intelligence. They recommend that, if a student does poorly in a verbal mental ability test, he should be given a non-verbal test which supposedly will not be influenced by a reading deficiency. Such a student may show a higher I.Q. on the non-verbal test than on the verbal test.

With further reference to the comparative significance of the non-verbal and verbal tests, Anastasi points out:

Let us suppose that a child obtains an I.Q. of 58 on a verbal intelligence test, and that the examiner subsequently finds evidence of a fairly severe language handicap in this child owing to foreign parentage. It is a common practice to conclude in such a case that the obtained I.Q. is not "valid," on the grounds that the verbal content of the test rendered it unsuitable for testing such an individual. At this point we may inquire, however, "On the basis of *what criterion* is this I.Q. invalid?" Certainly the obtained I.Q. may be a valid measure of the behavior defined by the criterion against which the particular test was validated. It is very likely that the same language handicap which interfered with performance on this test will interfere with the child's behavior in other linguistic situations of which this test is an adequate index. The correspondence with the criterion may thus be just as close for this child as for children without a language handicap. In school, for example, the language handicap would probably interfere with the child's acquisition of important skills and information.⁴

Because success in school depends in such large measure on ability to handle verbal concepts, the most satisfactory scholastic aptitude tests are those which test verbal ability. However, non-verbal tests are useful checks on the intelligence of students who have such handicaps as reading deficiency or deafness. If these students show a disparity in the I.Q.'s revealed by a verbal test and by a non-verbal test, this fact should serve as a cue for further investigation. Even so, this fact should not be considered a *bona fide* basis for depreciating the value of the I.Q. derived from a verbal mental ability test.

⁴Anne Anastasi, "The Concept of Validity in the Interpretation of Test Scores," *Educational and Psychological Measurement*, X (Spring, 1950), 68-69

HOW GOOD AN INDEX OF ABILITY IS THE I.Q.?

The I.Q. is a rough index of mental ability. It is not a precise index and therefore should not be used as such. In other words, an I.Q. should be thought of as an approximation of the true mental ability of a person relative to the mental abilities of other persons who took the same test.

An idea of the significance of the I.Q. as an index of mental ability for the population at large is presented in Table 15.

TABLE 15*
DISTRIBUTION OF I.Q.'s AND DESCRIPTIVE TERMS APPLIED TO I.Q.'s OF
VARYING MAGNITUDE

Range of I.Q.	Approximate Percent of Total Population in Ranges	Descriptive Term	Additional Descriptions
above 150	0.1	near genius	.....
130-149	5.0	very superior	.....
115-129	14.0	superior	college entrants
85-114	66.0	normal	high school graduates
70-84	14.0	dull	.....
60-69	2.0	borderline	.....
40-59	1.0	moron	{ institutional cases, dependent on society
20-39		imbecile	
0-19		idiot	

*Adapted from data presented by Robert B. Bernreuter and Edward J. Carr. "The Interpretation of I.Q.'s on the L-M Stanford-Binet," *Journal of Educational Psychology*, XXIX (April, 1938), 312-314.

The classifications given in Table 15 have been adapted from an article by Bernreuter and Carr and are based on I.Q.'s obtained from the revised Stanford-Binet. There are many systems of classification similar to that appearing in this table; these systems do not all agree in the descriptive titles assigned to given I.Q. ranges.

Some psychologists have sharply criticized the descriptive terms, such as "very superior" or "dull," used to designate given I.Q. ranges. Cronbach, for example, has called the practice of so labeling certain groups as "normal," "near genius," and so forth as "fallacious, because there is no borderline at which genius, for example, suddenly appears. Some persons of I.Q. 110 make significant contributions, and some of I.Q. 160 lead undistinguished adult lives. Some adults of I.Q. 80 are incapable of adjustment to the world, and some of I.Q. 60 support them-

selves and make an adequate home. Some classifications . . . are convenient, but it is wrong to think of them as rigid pigeon-holes. Clinical disposition of a case is always based on a combination of mental test data with evidence of the person's functioning in social and practical situations."⁵

Mental Ability and Occupational Levels

The I.Q. has also been found to be a rough index of the occupational levels which individuals will attain. In a classic study of this matter, Proctor gave the Army Alpha Group Test of Intelligence to 1,514 high-school-age students. Thirteen years later, he followed up 945 of these persons and found the jobs in which they were engaged. He next classified these jobs, according to specific payroll titles, into five broad occupational groups ranging from high-to-low-level types of jobs. He then computed the average I.Q. for each group. His findings appear in Table 16.

TABLE 16*

AVERAGE I.Q. OBTAINED ON THE ARMY ALPHA GROUP TEST OF INTELLIGENCE OF OCCUPATIONAL GROUPS BASED ON PROCTOR'S STUDY

Average I.Q.	Occupational Group	Typical Jobs in Group
115	I	Business executives, college professors, dentists, engineers, lawyers, physicians, surgeons, etc.
108	II	Business managers, real estate and insurance brokers, farm managers, housewives, nurses, private secretaries, salesmen, teachers, etc.
104	III	Bookkeepers, clerical workers, electricians, mechanics, stenographers, salespersons, etc.
99	IV	Foundrymen, janitors, letter carriers, mill hands, etc.
97	V	Unskilled laborers

*W. M. Proctor, "Intelligence and Length of Schooling in Relation to Occupational Levels," *School and Society*, XLII (1935), 783-786.

Table 16 shows that, on the average, the higher the I.Q. a student had, the higher the level of the job he held as a young adult. Note, however, that the I.Q.'s given in this table

*Lee J. Cronbach, *Essentials of Psychological Testing* (New York: Harper and Brothers, 1949), p. 123.

are averages. They do *not* show the range of I.Q.'s within a given group. Also, they do not show the overlapping in ranges between two groups, such as Group I and Group II. In other words, there were probably some business executives who had I.Q.'s lower than that of the average business manager.

Data concerning occupational level and mental ability similar to those reported by Proctor were secured from testing programs in World War I. An analysis of these data was made by Fryer.⁶

A study of the data secured in World War II was undertaken by Stewart, whose findings, in part, appear in Table 17.

TABLE 17*

THE A.G.C.T. SCORE EQUIVALENT TO SELECTED PERCENTILE RANKS OF CERTAIN OCCUPATIONAL GROUPS OF MEN TESTED BASED ON STEWART'S STUDY

OCCUPATIONAL GROUP	NUMBER OF CASES	A.G.C.T. SCORE EQUIVALENT TO PER CENTILE RANK OF				
		10	25	50	75	90
Accountant	216	114	121	129	136	143
Teacher	360	110	117	124	132	140
Stenographer	206	109	115	122	130	139
Clerk-typist	616	101	110	119	126	134
Clerk-general	2063	97	108	117	125	133
Salesman	889	94	107	115	125	133
Shop clerk	89	93	104	114	124	133
Carpenter	82	87	97	112	124	132
Steward	68	73	95	111	119	125
Cook's helper	62	78	89	110	122	132
Police man	172	86	96	109	118	128
Meat cutter	691	80	94	108	117	126
Job pressman	119	83	95	106	116	126
Welder—spot	89	73	89	104	112	122
Packing case maker	66	73	87	95	110	120
Barber	166	66	79	83	109	120
Lumberjack	236	60	70	85	100	116

*Based on Stewart's study. Naomi Stewart, "A.G.C.T. Scores of Army Personnel Grouped by Occupation," *Occupations*, XXVI (October, 1947), 3-44.

From this table it is clear that median scores on the Army General Classification Test show an increase for successive rungs on the occupational ladder, as represented by the selected groups presented. For example, the median score (50th percentile) made by accountants was 129; by teachers, 124; and by stenog-

⁶Douglas Fryer, "Occupational Intelligence Standards," *School and Society*, XVI (1922), 273-277.

raphers, 122. These groups made the highest median scores; the lowest such scores were made by lumberjacks (85) and by barbers (83).

Table 17 reveals another very important fact. There is a great deal of overlap in A.G.C.T. scores among the occupations given. The "most intelligent" men in some of the lower groups are superior to the "least intelligent" men in some of the higher occupational groups. For instance, the highest 10 percent of lumberjacks made scores of 117 or above. The lowest 10 percent of the accountants made scores of 114 or below. Because this overlap exists, it is impossible to make sound vocational predictions solely on the basis of scores on a mental ability test such as the A.G.C.T.

The data in Table 17, moreover, do not reveal how ability is related to success in a particular occupation. In their work, some low-scoring accountants may be more successful than some high-scoring accountants. A spot-welder with a score near the median of his group may be more successful than a stenographer with a median score for her group. In other words, success in an occupation is due only in part to ability as measured by such a test as the A.G.C.T.

Nevertheless, Tables 16 and 17 indicate that intelligence has some positive relationship to the ability to get along successfully in adult occupations. Even though this relationship is definitely not perfect, the I.Q. or an equivalent index is a rough but useful means of designating a kind of mental ability that is important to occupational achievement.

The measurement of mental ability, as pointed out earlier in this chapter, had its beginnings in the work of Binet. Numerous tests have been devised, whose principles of construction are directly traceable to those employed in the Binet scale. Indeed, it is difficult if not impossible to find a test of mental ability whose construction has not been influenced by the Binet scale or one of its revisions. Even though this is true, certain types of tests are better characterized by their differences from, rather than by their similarities to, the Binet scale. Most of these paper-and-pencil tests yield a single score; a few yield multiple scores.

WHAT ARE THE FEATURES OF PAPER-AND-PENCIL TESTS?

Paper-and-pencil tests, as just mentioned, were devised to meet the need for mental ability tests which could be administered to groups of recruits in World War I. Because of the large number of men to be tested, it was not feasible to use a test which required a lengthy individual interview. These group tests differed from the Binet not only in the techniques of administration but also in other important respects.

The Binet-type test, it will be recalled, contains items that can be passed by the typical or average person at each chronological age. The group-type test, however, contains items that are not designated as passable by the typical person of a given age. Rather, the group-type test combines items which are passable by typical persons within a given age range. In such a paper-and-pencil test, the items are usually arranged in order of difficulty, the easiest items first, the most difficult items last. Therefore, in a sense, this test is a power test of mental ability even though it has a specified time limit.

The group test-maker, of course, does not ignore the basic idea that the test items must be suitable to the various age levels of the persons who are to take the test. He obviously does not expect a 10-year-old fourth-grade pupil to be able to pass the same items that a 20-year-old college sophomore can pass. Therefore, the test-maker designs group paper-and-pencil tests for a limited age or grade range which corresponds to a limited range in mental ability. For example, the test entitled *SRA Primary Mental Abilities, Intermediate*, is designed for ages 11 to 17, inclusive. *The New California Short-Form Test of Mental Maturity, Intermediate*, is for grades 7 to 10, inclusive. In such paper-and-pencil tests, the scaling of items is not as precise as it is in individual tests of the Binet-type.

In scoring a group paper-and-pencil test, the tester counts the number of separate items that the student answered correctly. The number, of course, is the student's total score. The tester next employs the table of norms given in the test manual to convert that total score into a mental age for the student. The mental age obtained from the total score is similar to that obtained from a Binet-type test.

For most guidance purposes the equated mental age obtained through the use of norms provided in the manual of a group mental test is quite satisfactory. This mental age, of course, can be used in computing an I.Q. An example will clarify the point. Suppose that a 13-year-old boy in the eighth grade made a total score of 77 on *The Henmon-Nelson Tests of Mental Ability, Elementary School Examination for Grades 3 to 8, Form A*. The total score of 77 is equal to a mental age of 14 years and 4 months. By applying the formula, $I.Q. = M.A./C.A. \times 100$, the student's I.Q. is found to be 110.

The I.Q. of this student indicates that he probably learns faster than others his own age, but this I.Q. does not give any indication of how he compares exactly with other students his age. This can be determined from the manual for the Henmon-Nelson tests which presents a table of percentile norms. Through these norms, total scores can be converted into percentile ranks. For instance, the student's score of 77 is equal to the 75th percentile rank for 13-year-old students and to the 65th percentile rank for eighth-grade students. These percentile ranks have meaning for the teacher or counselor. The teacher can see, for example, that the student's scholastic ability equals or exceeds that possessed by 65 percent of the eighth-grade students on whom the test was standardized. Thus, this student can be expected to be in the upper half of his class scholastically. If he is not, the teacher has a responsibility for discovering why. The important thing to note here is that a student's percentile rank on a scholastic ability test provides useful diagnostic cues for the teacher and other guidance workers.

Another characteristic which distinguishes a paper-and-pencil test from a Binet-type test is the ease and accuracy of scoring. Because the answers to items in the former test are objective, the scoring of these answers tends to be both simple and accurate. This contrasts with the answers to some items of the Binet scale. In one item in that scale, for instance, the student is asked the meaning of a word and is allowed to give his own free response. The scorer must judge the value of the response by comparing it with a wide variety of "correct" and "incorrect" responses, as given in the test manual. In a typical paper-and-pencil mental test, however, a vocabulary item pre-

sents a word and five optional words. One option is the correct answer for the presented word; the other options are not. Thus, the student's answer is limited to a choice of one of five words. Because the student clearly checks the word he believes to be correct, the tester can readily determine whether the answer is right or wrong.

In summary, paper-and-pencil tests of scholastic ability have certain advantages over individual tests. They can be administered to a number of individuals at one time. Their items are objective and therefore can be scored quickly and accurately. Although these paper-and-pencil tests, in some respects, are inferior to individual tests, they yield total scores that usually can be converted into mental ages or, even better, into percentile ranks for students of the same age or in the same grade.

WHAT ARE MULTISCORE TESTS OF MENTAL ABILITIES?

So far, this chapter has discussed the tests of scholastic ability that try to measure a single trait, namely, general intelligence. Such tests are popularly referred to as I.Q. tests. They yield a single total score which is supposed to represent a student's level of *general* scholastic ability. For many purposes, the validity of this score, or the mental age derived from it, has been demonstrated. And the same is true of the I.Q. calculated from a given mental age. The I.Q., according to many studies, has a positive and reasonably high correlation with ability to learn in school. Also, the I.Q. is a useful index of ability to be successful at certain types of work. For these reasons, counselors and teachers use these single score tests and the mental ages and I.Q.'s therefrom to good advantage.

The shortcomings of commonly used single-score tests have been revealed by the statistical procedure known as *factor analysis*.⁷ This procedure was first developed and applied to mental ability tests by Spearman and his co-workers in England. In the United States, pioneer work in this field has been conducted by Thurstone.

⁷The reader is referred to Chapter 3 for an elaboration of this procedure

The factor analyses made by Spearman and Thurstone have shown that there are different kinds of intelligence. Their studies, however, did more than prove the obvious fact that one person is better at some things than he is at other things and that at one thing one person is better than another person is. They provided information about the various kinds of intelligence which are measured by mental ability tests. Thurstone, for example, gave a battery of tests, each of which was believed to measure one kind of mental ability. He gave this battery to groups of students. He computed the coefficients of correlation among the scores on the various tests making up his battery, and then made a factor analysis of these coefficients.⁸ The factors revealed by the original analysis were revised somewhat as the result of subsequent analyses.

On the basis of his work in this field, Thurstone has found seven factors which he believes account for most of the correlations found among his various mental ability tests. He has designated these factors as follows: V, Verbal-meaning; S, Space; R, Reasoning; N, Number; W, Word-fluency; M, Memory; and P, Perception. Thurstone, it should be noted, does not claim that these seven factors represent all existing mental abilities. However, he does show that all seven factors have been clearly identified and are basic to success in the performance of corresponding mental tasks.⁹ The battery of tests which Thurstone developed to measure these mental factors is entitled *Primary Mental Abilities*.

Unfortunately, multi-factor mental tests such as Thurstone's are as yet of unclear value for counseling. Uncertainty as to their value was summarized by Cronbach, thus: "Those who claim that factor V predicts linguistic subjects, N predicts mathematics, and S predicts art or architecture have leaped to conclusions. . . . At present there is no published research to assist a counselor in making inferences about, say, a pupil with poor M and high R, or low V or average W."¹⁰ Even with reserva-

⁸L. L. Thurstone, *Primary Mental Abilities* (Chicago: University of Chicago Press, 1938).

⁹For a simple explanation of these abilities consult Lorraine Bouthilet and Katharine M. Byrne, *You and Your Mental Abilities* (Chicago: Science Research Associates, 1948).

¹⁰Cronbach, *op. cit.*, p. 209.

tions such as those expressed by Cronbach, the potentialities of differential measurements of mental ability are so great that all counselors should, if possible, lend a hand in the accumulation of data by which the values of multi-factor mental tests may be judged.

WHAT SCHOLASTIC ABILITY TESTS ARE AVAILABLE?

Six mental ability tests which have proved to be useful in guidance work are described next. These tests have been selected so that one or more of them can appropriately be used at each grade level in school. As was pointed out in Chapter 9, the buying habits of test-users grow up much as do those of other types of consumers. These habits may impel a person to buy and use one mental test rather than another although both tests are approximately equal in price, quality, and usefulness. These influences rather than basic differences in value may well have been the determining factor in the selection of tests for inclusion in this volume. Undoubtedly good tests of mental ability other than those listed exist.

In addition to these six tests, two others are described. These are multi-score tests which have been published relatively recently. Because these tests (*The Differential Aptitude Test* and the *SRA Primary Mental Abilities*) appear to be carefully constructed, they deserve a thorough tryout by guidance workers. Suggestions for studies and investigations using these tests locally can be obtained from the publishers.

American Council on Education Psychological Examination for High School Students

This is a time-limit test which yields a total score and two subscores: one on linguistic ability (L-score) and another on quantitative thinking (Q-score). Three editions (1946, 1947, and 1948) are currently available. Each form was designed to correlate highly with previous forms of the test.

Reliability: The reliability coefficients reported range from .89 to .93 for the total score for individual grade groups for the 1944-1948 editions.

Validity: Over the years, validity studies have shown that total score correlates about .50 with school marks. Significance

of L-score and Q-score as differential predictors of success in various school subjects is not clearly established.

Norms: Tables of percentile ranks and equivalent scores are available for 1944-1948 editions for grades 9 through 12.

Authors: All forms prior to the 1948 edition were developed by L. L. and T. G. Thurstone. The 1948 edition was constructed by the staff of the Educational Testing Service from materials developed by these two authors.

Publisher: Educational Testing Service,
Princeton, New Jersey.

Kuhlman Anderson Intelligence Test (Sixth Edition)

The subtests of this test are issued in separate booklets for each grade from kindergarten through 6, a booklet for grades 7 and 8, and one for grade 9 through maturity. The 38 tests included in the battery are also available separately. The *Sixth Edition*, which maintains the same format and basic tests used in earlier editions, presents a greatly improved manual.

Reliability: The reliability coefficients for groups of 100 pupils in a single grade are clustered in the low nineties. Other evidence presented in the manual indicates that this test is reliable enough to be used for guidance purposes.

Validity: This test yields results comparable to those obtained from similar mental ability tests. The test apparently measures intellectual attributes which are correlated with success in school.

Norms: Scores on this test may be converted into mental age and intelligence quotient equivalents.

Authors: F. Kuhlman and R. G. Anderson.

Publisher: Personnel Press, Inc.,
32nd Street and Elm Avenue,
Baltimore 11, Maryland.

*New California Short-Form Test of Mental Maturity
(1950 Edition)*

Four subtests are combined to yield the "non-language tests" score and three subtests make up the "language tests" score. These two scores are combined to yield a "total mental factors" score. The seven subtests are also organized to show

abilities in *spatial relationships*, *logical reasoning*, *numerical reasoning*, and *verbal concepts*.

The following forms of the test are available:

Pre primary	Kindergarten Entrance Grade 1
Primary	Grades 1 through 3
Elementary	Grades 4 through 8
Intermediate	Grades 7 through 10
Advanced	Grade 9 through Adult Level

Reliability: The following split-half reliability coefficients for the mental ages on the various Short Form Tests are reported in the manual. Reliability coefficients for scores on the

Grade	Total	Language	Non-Language	N	Grades Tested
Pre primary	95	89	91	500	1
Primary	97	88	96	600	2-3
Elementary	96	91	91	1,000	4-6
Intermediate	95	93	89	600	7-10
Advanced	94	91	87	400	9-12

spatial relationships, logical reasoning, numerical reasoning, and vocabulary subtests range between .81 and .93 for the above groups.

Validity: Although the manual contains no figures on validity, it includes the following statement related to this matter: "The traditional method of correlating the results of this series with the averages of several other intelligence tests (protecting results by observing the usual cautions regarding sampling and other statistical safeguards) reveals that the general, or Total Mental Factors I.Q.'s obtained with this test may be used for comparative purposes with other intelligence tests. However, dealing only with mental ages and intelligence quotients obscures and ignores the separate important factors which constitute mentality, and it is in terms of these factors that the abilities of children should be diagnosed."

Norms: For non-language, language, and total mental factors scores, mental age and grade equivalents are provided in the manual. Percentile norms are provided for all scores at each age. It is also possible to compute percentile ranks for each of the aforementioned scores.

Authors: E. T. Sullivan, W. W. Clark, and E. W. Tiegs.

Publisher: California Test Bureau,
5916 Hollywood Boulevard,
Los Angeles 28, California.

The Otis Self-Administering Tests of Mental Ability

These time-limit tests consist of a Higher Examination (designed for Grades 9 through 12 and for college students) and an Intermediate Examination (designed for Grades 4 through 9). Four alternate forms of each test are available.

Reliability: For Higher Examination, .92; for Intermediate Examination, .95. Computed by correlating alternate forms.

Validity: Test scores were correlated with scholarship. Coefficients of validity, as reported from two studies: Grade 11, coefficient of validity, .55, based on 240 cases; Grade 12, coefficient of validity, .57, based on 204 cases.

Norms: Age and grade norms furnished in the manual, as well as charts for translating raw score to percentile rank, or to Binet Mental Age.

Author: A. S. Otis.

Publisher: World Book Company,
Yonkers-on-Hudson, New York.

The Ohio State University Psychological Test: Form 21

This is a work-limit test which yields a total score for scholastic aptitude, and a subscore for reading ability.

Reliability: .93 based on 300 cases. Computed by correlating two forms of the test.

Validity: Criterion used for validating was the point-hour ratio of college freshmen, covering a period of three full quarters (i.e., a college year of 36 weeks). Coefficient was .68, based on 1,030 cases.

Norms: Norms for reading score and for total score in percentile form are furnished for each grade, Grades 9 through 12, and for college freshmen.

Author: Herbert A. Toops.

Publisher: Science Research Associates,
57 West Grand Avenue,
Chicago 10, Illinois.

Pressey Senior Classification Test

This time-limit test is designed to measure general ability or to be used in first investigation of the accuracy of grade or section placement of the student.

Reliability: Determined by correlations between scores on Senior Classification Test and scores on the alternate form (Senior Verifying Test). Coefficient of .91, based on scores of 334 gainfully occupied men; coefficient of .90, based on scores of 181 women.

Validity: The scores of 57 University of Minnesota High School freshmen had a .92 correlation with criterion—the mean scores made by students on nine other standard intelligence tests. For these same students, the Classification Test correlated more highly with academic grades than did most of the other nine tests.

Norms: Median scores for Grades 7B through 12A, and for ages 11½ through 17½. Norms for gainfully occupied adults and for various occupational groups have been published by the Employment Stabilization Research Institute, University of Minnesota.

Authors: S. O. and L. C. Pressey.

Publisher: Public School Publishing Company,
Bloomington, Illinois.

Chicago Tests of Primary Mental Abilities (Single Book Edition)

This battery is designed to measure six important factors or mental abilities. They are N, Number; V, Verbal-meaning; S, Space; W, Word-fluency; R, Reasoning; and M, Memory. For ages 11 through 17. Each test yields a separate score.

Reliability: Using groups of approximately 200 pupils, the corrected odd-even reliability coefficients were obtained for each half-year for Grades 6, 8, 10, and 12 for the long form of the test. On all factors except M and W, the coefficients were .95 or above for each group. The coefficients for M ranged in the sixties for Grades 6 and 8, in the seventies for Grade 10, and in the low eighties for Grade 12. No reliabilities are available for the Word-fluency section of the test. The *Single Booklet Edition* may not be as reliable as the long form.

Validity: The estimated correlations of each of the six composite scores with the primary ability it is intended to appraise are: N, .90; W, .91; V, .97; S, .92; M, .79; and R, .90. The intercorrelations between the factors are low; the median is .39.

Norms: Percentile ranks and age equivalents for each half-year of age from 11 through 17½. M.A. equivalents also available.

Authors: L. L. and Thelma Gwinn Thurstone.

Publisher: Science Research Associates,

57 West Grand Avenue,

Chicago 10, Illinois.

Differential Aptitude Tests

This battery of eight tests yields the following separate scores: Verbal Reasoning, Numerical Ability, Abstract Reasoning, Space Relations, Mechanical Reasoning, Clerical Speed and Accuracy, Language Usage—Spelling, and Language Usage—Sentences. The manual states that these "tests are intended to cover the major measurement requirements in the guidance program." Appropriate for use in Grades 8 through 12. Two comparable forms of the test are available.

Reliability: The reliability coefficients for Form A were computed separately for boys in each grade, Grades 8 through 12. The mean reliability coefficient was then obtained by means of Fischer's Z function. The resulting mean reliability coefficients by separate tests for a total of 960 boys follow: Verbal Reasoning, .90; Numerical Ability, .90; Abstract Reasoning, .90; Space Relations, .93; Mechanical Reasoning, .85; Clerical Speed and Accuracy, .87; Spelling, .92; and Sentences, .88. Comparable results were obtained in a similar manner for a group of 1,064 girls.

Validity: Intercorrelations among tests in battery give some evidence for the claim that this test measures different factors. For one sample of boys the intercorrelations ranged in magnitude from less than .10 to more than .60. The distribution of the 28 coefficients (all positive) obtained by correlating all tests with each other, is: 2, .60—.70; 10, .50—.59; 3, .40—.49; 3, .30—.39; 2, .20—.29; 7, .10—.19; and 1, .01—.09. Validity coefficients are reported in supplements to the manual

which are issued from time to time. The correlations between school marks and test results appear to cluster in the range .40 to .60.

Norms: Percentile ranks for boys and for girls in Grades 8 to 12, inclusive.

Authors: George K. Bennett, Harold G. Seashore, and Alexander G. Wesman.

Publisher: The Psychological Corporation,
522 Fifth Avenue,
New York 18, New York.

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Measuring Scholastic Achievement

EVERYONE concerned with education is anxious to know how much students learn in school. For years, teachers have made judgments about students' levels of achievement, using marks to record these judgments. But making such judgments has often plagued teachers—and not without reason. No exact or completely satisfactory yardstick with which to judge a student's achievement is available. In fact, all of the yardsticks now in use are open to some criticism.

STRENGTHS AND WEAKNESSES OF ACHIEVEMENT TESTS

The unreliability of teachers' marks was demonstrated in a pioneer study by Starch and Elliot.¹ They had a number of English teachers grade the same final examination paper, written by a student. Working independently, each teacher studied the paper and assigned a mark to it. Their marks ranged from 50 to almost 100 percent. The results of this and many other similar studies have raised many questions about the so-called "essay" type of examination.

Near the turn of the century, educational scientists began to recommend that the "essay" type of examination be replaced by the so-called "objective" type. Among the early tests designed to improve teacher judgments was the handwriting scale developed by E. L. Thorndike. This scale contained samples of handwriting arranged in order of quality, according to the judgments of experts in this field. In using this "test," the teacher compared a specimen of the student's handwriting with

¹Daniel Starch and E. C. Elliot, "Reliability of Grading High School Work in English," *School Review* (No. 20), (1912), pp. 442-457.

the samples appearing in the scale; thus he decided which sample the specimen matched most closely in quality. Through this scale, Thorndike showed that it was possible to increase the objectivity of marking procedures in at least one area of scholastic achievement.

Unfortunately, the initial period of objective test development produced a large number of achievement tests whose criteria of validity were not well-defined and whose relationships to educational objectives were not clear-cut. The emphasis appears to have been mainly if not solely upon the use of new types of questions such as true-false, completion, multiple-choice—that is, questions whose answers could be objectively scored. Many such tests were accepted and used because they could be easily and accurately scored, not because they measured students' progress in achieving the objectives of the curriculum.

The early era of the new-type test was marked by other poor practices. Regarding these practices, Lorge commented as follows:

The changes in curriculums from 1892 proceeded at an ever-rapidly accelerating tempo. The curriculums of the 1920's and 1930's were not those of the 1890's. Unfortunately, many of the achievement tests developed between 1908 and 1928 continued in use as if the curriculums and methods of teaching remained static. Misuse of these achievement tests and inexpert interpretation of them caused their temporary repudiation. Moreover, teachers all too often on recommendation of their supervisors, taught children so that they would be, specifically, successful on the "new-type" tests. This they did by coaching mechanically or by teaching for the objectives or content of the achievement tests. Such perversion had the force of making some curriculums nearly identical to the organization of specific achievement tests.²

In more recent years, many of the abuses associated with objective-type tests have, in large measure, been eradicated. It is now generally recognized that all achievement tests, including those of the objective type, should be designed to measure student progress in terms of curriculum objectives.

²Irving D. Lorge, "Trends in the Measurement of Achievement," *The Measurement of Student Adjustment and Achievement*, ed. by Wilma T. Donahue, Clyde H. Coombs, and Robert M. W. Travers (Ann Arbor, Mich.: University of Michigan Press, 1949), p. 87.

Although achievement tests are better geared to the curriculum and are more useful aids to learning and evaluation than they formerly were, these tests cannot measure completely or adequately all the important outcomes of education. In a literature class, for example, it is relatively easy for the teacher to measure such traditional achievement as knowledge of author, plot, characters, and the like. It is a more complex and difficult task for the teacher to measure literary understanding and appreciation; however, with skill and ingenuity this can be done reasonably well.

When the teacher tries to measure less traditional but equally significant kinds of achievement, he finds that present testing techniques are quite inadequate. Consider, for example, one of the widely accepted objectives of literature courses—to create a desire to engage in worthwhile reading during leisure time. Teachers of literature believe and hope that their instruction helps students to move toward this objective. These teachers, however, have made little headway in measuring students' progress toward this goal. Comparable examples can be found in other subject-matter areas.

In the discussion which follows, the broad and hard-to-measure areas of achievement related to curriculum objectives are not stressed because satisfactory methods of testing such achievement are not as yet available. Hence, the remainder of this chapter deals primarily with the relatively limited areas of achievement for which reasonably good tests are at hand. The reader who wishes to explore some of the frontiers in achievement test development will find much useful material in the publications of *The Eight Year Study*.³

HOW ARE STANDARDIZED ACHIEVEMENT TESTS USED?

Achievement tests serve many purposes in the instructional program of the school. They also contribute to the effectiveness of guidance services.

Early in this chapter the teachers' frequent need for a sound base upon which to make their judgments about student

³A list of the tests used in the *Eight Year Study* which are currently available may be obtained from Cooperative Test Division, Educational Testing Service, Princeton, New Jersey.

achievement was mentioned. Counselors also need a firm base for making their judgments. True, counselors are not concerned with assigning marks, as are teachers. Yet, to do their job well, counselors have to obtain a clear and accurate picture of the present level of a student's achievement. A significant part of this picture may be revealed by standardized achievement tests.

Determining a Student's Status

The first guidance use of standardized achievement tests can be identified as determining the student's present status. In working with an individual student, the counselor often needs answers to such questions as these: Can this student do simple and practical arithmetic problems? Is he able to read with reasonable speed and comprehension? Has he achieved at the level expected of him? Securing answers to such questions is clearly an important part of the counselor's job. Some of these answers or clues to them appear in test results.

Supplementing Other Indicators

The second guidance use of standardized achievement tests, closely related to the first, is a supplement to other indicators of student achievement. The most prevalent "other indicator," of course, is teacher judgment expressed in some kind of scholastic mark. Obviously, when a counselor examines students' records, standardized achievement tests should not supplant teachers' marks; rather, the counselor uses test scores in conjunction with marks. In doing so, he follows the general principle of having available, whenever possible, two measures of the same aspect of behavior. For instance, he compares the teacher-assigned mark with the score made by the student on a nationally standardized history test in order to get two independent measures of achievement in history. Furthermore, because of justified local emphasis in the teaching of history, the nationally standardized examination may omit or underemphasize certain materials which the local teacher feels are important. Differences between teacher-assigned marks and standardized tests may also result from variation among textbooks.

Comparisons between students' marks and their scores on standardized examinations sometimes reveal teachers' biases in assigning marks. Study after study, for example, has established the fact that teachers in general give girls higher marks than they do boys. This sex difference in assigned marks may be due to teachers' assumptions that girls are more conscientious, use their abilities better, or cause less trouble in class. Yet it is important to note that on standardized achievement tests, boys and girls who are otherwise equal in ability tend to show the same levels of performance. A counselor should keep in mind the possibility of teacher bias in giving marks to boys and girls; if such bias appears, he should discount it by referring to the results of standardized achievement tests.

At times, counselors have seen a girl or a boy who had all A marks or all C marks in high-school subjects. From such a record it is impossible to determine that student's strong and weak points in subject-matter achievement. But when standardized achievement tests are given, such a student frequently does better in some subjects than in others. Thus, scores on the standardized achievement tests are relatively sensitive indicators of a student's strengths and weaknesses and are therefore helpful checks on his teachers' marks.

Predicting Achievement

Standardized achievement tests are also valuable in determining the need for acceleration or retardation of some students in one or more subjects. For example, if an eighth-grade student has a score on a standardized English test which indicates achievement at the tenth-grade level, this fact among others should be considered when his course is planned. Likewise, if a tenth-grade student gets low test scores in given subject-matter areas, he should be placed in learning situations which are most appropriate for him. When used for these purposes, achievement tests may lead to more flexible and more effective program planning.

In program planning, achievement tests can also be used as predictive devices. This use can be illustrated by rewording the questions presented earlier about a student's current achievement so that these questions deal with the student's future

achievement. For instance, can the student do simple arithmetic problems well enough to pass a bookkeeping course? Is his reading ability such that it will not handicap him in college? If he has achieved at the level expected of him, is this level sufficiently high to provide a satisfactory background for more advanced work? In answering these questions, a counselor is making predictions with reference to a particular student's future. To the extent that he relies on appropriate measures of achievement, he improves his predictions.

Relevant here is the oft-repeated statement, "If you want to know what a person will do in the future, find out what he has done in the past." On the National Archives Building in Washington, D.C., this statement is found: "What is Past is Prologue." What is true of the history of a nation is equally true of the history of each citizen. Common-sense evidence to support this statement is readily available. A grouchy neighbor rarely becomes the friendliest person in the block. The student who has been at the bottom of the class for years usually stays there. The non-reading athlete does not suddenly become a bookworm. These are but a few among many examples substantiating the generalization that patterns of achievement are relatively stable. It should also be recognized, however, that exceptions to this generalization can be found.

Perhaps one of the most significant devices for predicting achievement is the Binet test, or one of its descendants. Chapter 10, it will be recalled, described scholastic ability tests and some of their uses. There it was pointed out that success in passing most of the items in such tests is based on pre-test learning. Many of these ability tests, for example, contain vocabulary items in which the task is essentially one of demonstrating a knowledge of the meaning of words. Obviously, the student can pass an item only if he has had some experience through which he learned the meaning of that particular word, or the way to infer the meaning from the root, suffix, and/or prefix. The test-maker assumes that this student and other students who are the same age chronologically all have had the same or similar opportunities to learn the given word's meaning. These vocabulary items, research has shown, are good indicators of ability

to learn from books. They are, in fact, among the best measures of scholastic aptitude.

Like other items in mental ability tests, vocabulary items are useful as measures of academic aptitude only if some kind of norm is available. Thus, it is of little value to know that a given student can correctly define 50 of the 100 words in a certain vocabulary list. But if it is known that the average for students of his age is 50, then his performance can be considered average. Said another way, knowledge of the group's performance provides a standard with which individual performance can be compared.

Binet, it will be recalled, developed standards or norms for the test he constructed. If a student could solve as many of the items as the average for his age, Binet inferred that his mental growth was normal. If the student could pass items ordinarily passed only by those older than himself, this fact was taken to imply that he was above normal in mental growth. Likewise, if the student passed fewer items than the average for his age, this fact indicated he was below normal in mental development.

Achievement tests as well as scholastic ability tests can be used for scholastic predictive purposes. If this is done, the relationship of past achievement to future performance must be discovered. Guidance workers have conducted many studies to determine such relationships. They have, for instance, correlated high-school marks with marks obtained during the first year in college. On the basis of these studies, Travers states: "... a series of subject-matter tests having acceptable reliability coefficients may be expected to correlate between 0.45 and 0.70 with average first-year grades in college."⁴

When such relationships are known for specific tests in specific situations, their value as predictive instruments becomes even clearer. That is why the counselor should determine the extent of the relationship between the test scores obtained and marks given in his own school. By doing so, he can discover,

⁴Robert M. W. Travers, "Significant Research on the Prediction of Academic Success," *The Measurement of Student Adjustment and Achievement*, ed. by Wilma T. Donahue, Clyde H. Coombs, and Robert M. W. Travers (Ann Arbor, Mich.: University of Michigan Press, 1949), p. 156.

for example, whether the scores which students made on a standardized arithmetic test in the ninth grade can be used to predict the marks which these same students will earn in tenth-grade bookkeeping. The counselor can also determine if the students who made low scores on an English test in their senior year are likely to have difficulty in this same subject in college. In short, the counselor who is familiar with such relationships is able to use achievement tests effectively for predictive purposes.

This section has pointed out three major guidance uses of standardized achievement tests: to determine students' current achievement status; to supplement other measures of their achievement, such as school marks; and finally to predict their future educational performance. Consideration of the last-named use leads naturally to the question: If achievement tests are used for prediction, what is their relationship to mental ability tests which are also used for prediction?

RELATIONSHIP BETWEEN ACHIEVEMENT AND MENTAL ABILITY

The relationship between achievement and mental ability as measured by standardized tests has been studied by many investigators in a variety of school situations. In general, their studies indicate that, when these two measures are correlated, coefficients can be expected to range from .30 to .80, with most of them at or near .55, the middle of the range. That these coefficients are positive and moderately high is not surprising when the similarity of items in intelligence tests and those in achievement tests is considered. This point is neatly illustrated in a study by Lennon.⁶

Lennon administered the *Metropolitan Achievement Test* and the *Pintner General Ability Test* to a large number of students. The Metropolitan test for Grades 7 through 9 includes subtests of reading, vocabulary, arithmetic fundamentals and problems, English, and the other traditional academic areas. Among the subtests of the Pintner test are those entitled arith-

⁶Roger T. Lennon, "The Relationship Between Intelligence and Achievement Test Results for a Group of Communities," *The Journal of Educational Psychology*, XL, No. 5 (May, 1950), 301-308.

metic problems, vocabulary, opposites, and number sequence. Employing scores from the Metropolitan test and the Pintner test, the average correlation between achievement and mental ability was .67 in Grades 7 and 9, and .72 in Grade 8.

To children in lower grades, Lennon gave tests which were appropriate for measuring their achievement and their mental ability. Using the scores thus obtained, he found that the correlation between intelligence and achievement was greater in the higher grades than it was in the lower ones. For example, the coefficient in Grade 9 was .67; that in Grade 2 was only .22. With reference to this finding, Lennon comments: "This apparent change in the relationship between upper and lower grades may be to some extent an artifact, reflecting differences in content of the intelligence tests used."⁶ Undoubtedly, the correlations obtained between measures of achievement and those of mental ability, as observed by Lennon, were influenced by the similarity of items appearing in the two types of tests. That is an important part of the whole picture.

HOW CAN ACHIEVEMENT TESTS BE EVALUATED?

Scholastic aptitude, as it is measured by current tests, may be defined as the potentiality for successful achievement. Hence, a scholastic aptitude test is valid only to the extent that it bears a close relationship to achievement. The counselor must recognize that, in a very real sense, measures of scholastic ability and measures of achievement reveal different sides of the same coin.

The most pronounced difference between the two kinds of tests is in the criteria used in validating them. In the case of a given scholastic aptitude test, the ultimate criterion is success in schoolwork. Intermediate criteria are: (a) the correlation of this test with other tests also designed to measure scholastic aptitude, and (b) the progressively higher scores made by students in successive grades of the school ladder. But the real index of the validity of a scholastic aptitude test is whether or not that test foretells ability to succeed later in schoolwork. The determination of this index is at times difficult, but it is usually worth the time and effort required.

⁶*Ibid.*, p. 306.

It makes little difference what kinds of items are used in an aptitude test so long as these items contribute to the test's major purpose—that of prediction. Some items may be vocabulary items with which many test-takers have had reasonably equal opportunities to become familiar. Other items, however, may be new to test-takers. Examples of items with which the typical person has had little or no experience are the "block-counting" items appearing in the General Classification Test used by the U.S. Army during World War II. Whether familiar or not, any item is good for educational purposes to the extent that it successfully predicts ability to do scholastic tasks.

In the case of an achievement test, however, the items must be geared to the curriculum because the criterion of success is how well the test measures student progress toward achieving the goals set for the curriculum. For example, during the experiences provided by the school, if the student has had the opportunity to learn how to compute the real rate of interest on an installment plan loan, a test item on this topic is a fair and valid item. But if the student has not been exposed to the Pythagorean theorem, a test item dealing with the relationships among the sides of a right triangle is not a fair or valid measure of his achievement. The item might, however, be a good predictor of the student's ability to succeed in geometry. Insofar as the items in an achievement test are an adequate sampling of the things students have had opportunities to learn, that test tends to be valid. In other words, it measures what it is designed to measure.

While interpreting scores made on standardized achievement tests, the counselor should recognize that the learning opportunities in his school may not be exactly the same as those prevailing in the schools in which the test was standardized. Although the test may be a reasonably valid measurement of achievement in those schools, it may be less valid in the counselor's school. For this reason, the descriptions of achievement tests listed at the end of this chapter point out the necessity of estimating the validity of these tests in terms of a school's specific educational offerings.

The statistical determination of the validity of standardized achievement tests is a tremendous undertaking for a local school.

A presentation of the procedures involved is beyond the scope of this volume. In the suggested readings at the end of this chapter, however, the authors have included books which describe in detail the necessary steps for developing and validating achievement tests.

Fortunately, there are some practical things which a counselor can do to get clues to the appropriateness of a standardized achievement test for local use. Assume that the counselor is considering a battery of tests in various subject-matter fields. First, he can ask various teachers to evaluate the tests as measures of achievement in their respective fields. Second, he can, preferably with the help of teachers, compare the tests with the courses of study in corresponding fields. If the counselor finds a reasonable degree of correspondence between the tests and the courses, he may rightly decide to use that test battery.

After the test is given, the counselor can examine the students' scores for additional clues to the test's validity. He may find, for example, that the mean score in the history test of the battery is considerably lower than the mean scores in other subject-matter fields. If so, this may indicate that the achievement of students in the field of history is relatively low, or it may suggest that the test is measuring a different kind of history achievement than that being stressed by the local school.

In determining the validity of a test, a school should make sure that the items in that test correspond reasonably well to the learning opportunities provided by the school's curriculum. With reference to this matter, Durost states:

An achievement test is a collection of test items selected to represent a much wider body of information, in each separate subject-matter area, the exact extent and nature of which is determined by the curriculum makers and textbook writers. For example, if one is making an achievement test in the field of arithmetic, the body of information to be covered is that commonly taught in the various grades in the country as a whole, if the test is to be used nation-wide. Thus, the first step in the construction of an achievement test is to define the area of knowledge to be covered. This is done by examining courses of study and textbooks, paying special attention to the grade placement of topics. On the basis of this examination, items are selected which are commonly and generally taught at the various grade levels. From this it is obvious that a test

made up to fit the over-all or nation-wide situation as thus defined may not at all fit some local situation where the curriculum has been modified to meet local needs or as a result of the thinking of some local educators.⁷

If one accepts this point of view, he might logically ask such questions as these: Since the validity of standardized achievement tests must be determined locally, why not use only those tests made by local teachers? What are the advantages of standardized over teacher-made achievement tests?

ADVANTAGES OF STANDARDIZED ACHIEVEMENT TESTS

Standardized achievement tests are designed to have several advantages over locally-prepared tests. The principal advantages are described herewith.

1. *Standardized tests measure widely-accepted outcomes of education.* In constructing such a test, a group of subject-matter specialists comb textbooks, course outlines, and other teaching materials to select possible questions or items to be included. In general, these items are representative of practices in teaching over a wide geographic area. Then these specialists select out of the many possible items those items upon which there appears to be considerable agreement throughout the teaching field.

2. *Standardized tests are composed of objective-type items.* Test technicians take the selected items and phrase them into the most useful and sensitive types of objective questions, such as the multiple-choice, matching, or completion form. Some advocates of objective tests argue that such tests can be prepared locally by teachers for use in their own schools. As Weitzman and McNamara suggest in their book, *Constructing Classroom Examinations*,⁸ teachers can master many of the tricks of the trade of constructing objective test items. It is unfortunately true, however, that many teachers do not acquire sufficient competence in these test-making skills during the ordinary course of their work. As a result, their "home-made" objective

⁷Walter N. Durost, "Effective Use of Tests in Junior High School Guidance," an insert to *Proceedings 10th Annual Conference on Educational and Vocational Guidance* (New York State Counselors' Association, 1945), p. 4.

⁸Ellis Weitzman and Walter J. McNamara, *Constructing Classroom Examinations* (Chicago: Science Research Associates, 1949).

examinations for achievement testing frequently are little if any better than their traditional essay-type examinations.

3. *Standardized tests are pre-tested for the user.* The test-maker has given the test to a large number of students. He has determined its reliability according to the correlation methods described in Chapter 3. He has worked out percentile, grade, or age norms on a representative sample of students. And he has eliminated items that failed to show power to differentiate between good and poor students.

4. *Standardized tests have comparison values that are available in no other type of test.* Because such tests have been widely given in the process of standardization, the norms can be used to compare the achievement of students in a local school with that of students in other schools in other areas.

5. *Standardized tests are easy to administer, simple to take, and accurate to score.* In the process of standardizing these tests, test-makers have eliminated possible differences of opinion regarding right or wrong answers. They have done this by providing an objective scoring key that forestalls any tendency to "shade" the score for a particular student because the teacher believes that student to be a "good" or a "poor" worker.

These five advantages of standardized achievement tests alone are ample justification for their introduction or retention in a program of guidance testing.

CAN ACHIEVEMENT TESTS MEASURE UNDERSTANDING?

There has been a pronounced increase in the use of achievement tests that are more concerned with the measurement of understanding than of rote information and skill. Typical of the tests designed to measure such functional outcomes of education rather than specific subject-matter areas are the *Iowa Tests of Educational Development*. This test battery is described in detail later in this chapter. In commenting on the Iowa tests, Lorge wrote: "The battery includes tests appraising concepts in social studies and the natural sciences, skill in correctness of writing, ability to do quantitative thinking, general vocabulary, the use of sources of information and a series of tests in the interpretation of written materials in social studies, in natural sciences and in literary materials. These

measures of the concepts, skills, abilities, and interpretations of students are well made and important."⁹

Another battery designed to measure broader outcomes is the *General Educational Development Tests*. These tests, now available from the Educational Testing Service, were widely used for testing veterans and others whose formal education had been interrupted by military service.

Typically, tests of this type cover large areas, such as social studies, mathematics, and natural sciences. Since these tests are broad in scope, they do not place too much emphasis on determining the range of a student's knowledge or the level of his skills. They attempt, rather, to measure his ability to apply his knowledge and skills to the solution of new problems, or to the interpretation or evaluation of unfamiliar material.

The growing popularity of tests which aim to measure understanding is justified. The evidence now available seems to indicate that such achievement tests are satisfactory indicators of academic success. In one study, correlations between Iowa test scores and school marks ranged from .75 to .90.¹⁰ Other tests of this type were developed and used in the Fight Year Study. Although the report of this study suggests, it does not prove the potential usefulness of these tests.¹¹

With further reference to tests of this type, Lorge expresses this common-sense point of view:

The new direction in testing is moving from so-called sheer information to appraisal of understanding. . . . The concern for adequate appraisal of understanding, however, should not lead to the exclusion of the appraisal of the amount of available knowledge or available skill the student has. Understanding in a vacuum of content is nonsense.¹²

HOW VALUABLE ARE DIAGNOSTIC ACHIEVEMENT TESTS?

A special type of achievement test has been designed to measure specific segments of knowledge and particular skills.

⁹Lorge, *op. cit.*, p. 94.

¹⁰Allen N. Busse as quoted in "How to Use the Test Results," *The Iowa Tests of Educational Development* (Chicago: Science Research Associates, 1946), p. 25.

¹¹Eugene R. Smith, Ralph W. Tyler, and others, *Appraising and Recording Student Progress* (New York: Harper and Brothers, 1942).

¹²Lorge, *op. cit.*, p. 95.

Such tests, known as *diagnostic achievement tests*, have been described by Cronbach in these words:

A diagnostic achievement test at its best is an impressive tool. With or without such tests all teachers must at times study their students to determine why they are having difficulty. The diagnostic test tries to increase the efficiency of diagnosis by bringing to the teacher's aid all the insights available from research on learning failures. An ideal diagnostic achievement test calls the teacher's attention to every aspect . . . wherein the pupil might have stumbled. By checking off one at a time the many sorts of possible error, the teacher is left with a picture of the specific weaknesses that must be remedied before the pupil can make normal progress.¹⁸

Diagnostic achievement tests are similar in many respects to subject-matter achievement tests; the principal differences between the two types of tests are the kinds of scores that can be obtained. Diagnostic tests are arranged so that they yield not only a total achievement score, but also individual scores for each type of knowledge or skill measured. The *SRA Reading Record*, for example, provides a score for each of these ten basic reading skills: rate of reading, comprehension, paragraph meaning, directory reading, map-table-graph reading, advertisement reading, index usage, technical vocabulary, sentence meaning, and general vocabulary. These individual scores provide very specific leads to the kinds of reading skills in which a student is deficient, normal, or above average.

Some tests are set up to serve both as measures of general achievement and as diagnostic instruments. The *Metropolitan Achievement Tests*, and the *Stanford Achievement Test*, both described later in this chapter, can function effectively in this dual capacity.

The duality of function of such tests can be seen by examining the data presented in Table 18. This table shows a boy's scores on the *Metropolitan Achievement Test*, Advanced Battery, Complete, Form V. When this boy took the test battery, he was 14 years 2 months old, and was in the beginning of the ninth grade. The figures in the last line of the table show that this boy's average achievement was equivalent to Grade 8.8, and to age 14 years 1 month. In other words, his achievement

¹⁸Cronbach, *op. cit.*, pp. 289-290.

in general was only slightly below that expected of boys of his age and grade placement.

TABLE 18

TEST SCORES ON THE METROPOLITAN ACHIEVEMENT TEST, ADVANCED BATTERY COMPLETE, FORM V, OBTAINED BY A BOY 14 YEARS AND 2 MONTHS OLD, WHEN ENROLLED IN THE FIRST MONTH OF GRADE 9

Test	Raw Score	Grade Equivalent	Age Equivalent
1. Reading.....	38	8.6	14-0
2. Vocabulary.....	41	9.4	14-7
*Average Reading (1 + 2).....	—	9.0	14-4
3. Arithmetic Fundamentals.....	32	8.4	14-2
4. Arithmetic Problems.....	12	7.3	12-10
*Average Arithmetic (3 + 4).....	—	7.9	13-6
5. English			
I. Language Usage			
II. Punctuation and Capitalization			
*Total (Parts I and II).....	25	6.0	11-4
III. Grammar			
*Total (Parts I, II, and III).....	51	10.5	14-9
6. Literature.....	26	7.9	13-5
7. Social Studies: History.....	28	9.3	14-2
8. Social Studies: Geography.....	30	9.0	14-1
*Average Social Studies (7 + 8).....	—	9.2	14-2
9. Science.....	29	8.7	14-5
10. Spelling.....	30	9.0	14-8
Average Achievement.....	—	8.8	14-1

*Not included when average achievement was computed.

The other figures in Table 18, under the headings "Grade Equivalent" and "Age Equivalent," reveal detailed facts about this boy's achievement. In the tests in grammar, vocabulary, and history, his grade equivalents exceeded that of his average or general achievement (grade equivalent, 8.8), and his actual grade placement (9.0). In these three tests and in the tests in geography and spelling, this boy's achievement appeared to be satisfactory. In other tests, however, his scores were lower than they should have been for a student in Grade 9.0. His grade equivalent was lowest (6.0) in language usage, punctuation, and capitalization. His grade equivalents were next lowest in arithmetic problems (7.3), and in literature (7.9).

If a counselor were diagnosing this boy's achievement as shown in Table 18, he might make the following recommendations:

1. The boy did better than average or as well as average for his present grade or age in many of the subjects in which he was tested. He was highest in grammar, vocabulary, and history.
2. The boy was farthest below grade and age in language usage, punctuation, and capitalization, and in arithmetic problems. In these four skills, he is probably in need of special remedial training.

As just illustrated, diagnostic tests can provide excellent leads and much assistance in the formulation of hypotheses with reference to a student's scholastic strengths and weaknesses. But such tests are most useful when results from them are combined with other information about the student. This point has been emphasized by Traxler in these words:

There are still too many teachers and too many counselors who expect to get from a modern testing instrument, reputed to be diagnostic, an automatic answer to their problems. Diagnosis is a thinking process. It is the formation of judgments and the formulation of hypotheses. It utilizes scores on tests along with other information concerning the individual. . . . The question of whether a score has diagnostic uses or not depends upon the total situation in which it appears.¹⁴

A further caution regarding diagnostic tests demands attention. Many of these tests are so short that they are not sufficiently reliable measures. This feature should be considered by the counselor. More specifically, he should investigate the reliability of each of the various tests making up a test battery. He will find, for example, that the manual for one achievement battery reports a reliability coefficient for ninth-grade students of .96 for "reading comprehension," but contains no data concerning the reliability of each of the three subtests whose scores make up the reading comprehension score. The manual, however, does provide separate norms for each of these subtests. The first subtest, "Following Directions," is composed of 10 items; the second, "Reference Skills," of 15 items; and the third, "Interpretations," of 30 items. When these 55 items are considered as a group, they have a satisfactory reliability, that is,

"Arthur E. Traxler, "Diagnostic Testing in Relation to Remedial Teaching," *The Measurement of Student Adjustment and Achievement*, ed. by Wilma T. Donahue, Clyde H. Coombs, and Robert M. W. Travers (Ann Arbor, Mich.: University of Michigan Press, 1949), p. 126.

.96. But when the subtest of only 10 items is considered alone, its reliability may be inadequately low. Therefore, using scores on this subtest for diagnosis is, at best, a highly questionable procedure. This suggests that test publishers do not always supply information concerning the reliability of the many short tests which are claimed to be diagnostic in nature and purpose. Until test publishers provide such facts, counselors should be cautious in using their tests.

WHAT ACHIEVEMENT TESTS ARE AVAILABLE?

In the remaining pages of this chapter a few achievement tests are described. These tests were selected because the authors believe them to be among the best available. Limitations of space make it impossible to include all of the good achievement tests, or even all of the superior ones. Study of the descriptions presented, however, will provide the reader with a reasonably adequate and representative picture of current achievement tests.

Cooperative Achievement Tests

A wide variety of selected subject matter tests in such fields as English, foreign languages, mathematics, science, and social studies, as well as survey tests make up the Cooperative Test Division's publications. Tests appropriate for high-school and for college students are available. Publisher's catalog lists specific tests currently available.

Reliability: Reliability is reported in terms of the standard error of measurement for each test. The reliability coefficients are generally above .90.

Validity: Test items are based on analysis of textbooks and curricula and are reviewed by subject-matter specialists. Validity must be determined locally.

Norms: Scaled scores are furnished for most of the Cooperative Tests. These scaled-score norms permit comparison of individual student's performance with that of "the average pupil in this country if he had typical instruction and the usual amount of training at the level at which it is ordinarily given." Percentile ranks by grades are available.

Authors: Selected in each subject-matter field.

Publisher: Cooperative Test Division,
Educational Testing Service,
Princeton, New Jersey.

Iowa Tests of Educational Development

This battery of tests is designed as a comprehensive measure of achievement of secondary-school (last half of Grade 8 through first half of Grade 13) students. The tests emphasize functional outcomes in areas of general education rather than specific subject-matter areas. The nine areas measured are: Understanding of Basic Social Concepts, General Background in the Natural Sciences, Correctness and Appropriateness of Expression, Quantitative Thinking, Interpretation of Reading Materials in the Social Studies, Interpretation of Reading Materials in the Natural Sciences, Interpretation of Literary Materials, General Vocabulary, and Use of Sources of Information. The complete test battery edition is rented; the rental fee covers scoring and the preparation of individual student profiles. Each test is also available on a purchase basis as a separate booklet with hand-scored answer pads or machine-scored answer sheets. The answer pads are self-scoring.

Reliability: The manual states that the reliability of each of the Iowa Tests of Educational Development is approximately .91 for a representative sample of students in a single grade.

Validity: The problem of validity is discussed in the manual. An unpublished study reveals substantial correlation between average school marks and test scores for students in various grades in high school. The manual also states: "Scores on individual tests, in general, correlate more highly with marks in related subjects than does the composite score with average marks." In the final analysis, however, validity must be determined by each school in terms of how well the test measures the results of its own instruction.

Norms: Percentile norms for each semester in the grades covered are available.

Authors: Prepared under the direction of E. F. Lindquist.

Publisher: Science Research Associates,
57 West Grand Avenue,
Chicago 10, Illinois.

Metropolitan Achievement Tests (Forms R, S, T, U, or V)

A series of test batteries designed to measure achievement in subjects commonly taught in Grades 1 through 8 and first half of Grade 9. Five batteries, each covering approximately two grades, are available in three to five different forms. Certain of the subject tests included in the batteries may be obtained separately. The manual which accompanies the test not only discusses the Metropolitan Achievement Test but also contains an excellent general discussion of achievement testing.

Reliability: As expected, the reliability coefficients of the various tests differ considerably. Corrected split-half reliability coefficients range from .80 to .97. The tests appear to have satisfactory reliability.

Validity: Items are drawn from representative courses of study and widely used textbooks. Item analysis, based on extensive preliminary administration of the test, preceded the construction of the forms used in the standardization testing program. But, as in other comparable tests, the validity of this battery as a measure of achievement of current instruction must be determined locally.

Norms: Grade and age equivalents, modal age-grade norms, and percentile ranks. Special norms are given for certain kinds of schools, e.g., white public schools in Southern states, and beginning seventh-grade pupils in cities of 300,000 population or over. Apply to publisher for further information.

Authors: R. D. Allen, H. H. Bixler, W. L. Connor, F. B. Graham, and Gertrude H. Hildreth.

Publisher: World Book Company,
Yonkers-on-Hudson 5, New York.

California Achievement Test Batteries

Three batteries available, each composed of tests in these areas: reading, mathematics, and language. Each area is measured by two subtests. The reliability of each of these subtests is probably such that its score is not satisfactory for individual diagnosis. Scores for each of the major areas are, however, reliable enough to be used for guidance purposes. Different batteries are available for testing achievement in Grade 1 through Grade 14.

Reliability: Coefficients of reliability of .92 or above were obtained for each of the three area tests for a single grade range. Reliability coefficients for the subtests are reported in the manual.

Validity: The manual for the Advanced Battery of the California Achievement Test Batteries states: "The selection of items, on which the validity depends, is simplified in this test because it measures some of the most tangible and easily identifiable objectives of the curriculum. Curricula in science and social studies may differ widely in different geographic areas; but the fundamental skills or tools of learning are relatively similar in all areas. Consequently, regardless of the area, scores on this test will show the mastery of the fundamental skills by the student in terms of grade placements and percentiles achieved by the population used in standardizing these tests."

Norms: Grade-age and percentile norms are provided in the manual.

Authors: E. W. Tiegs and W. W. Clark.

Publisher: California Test Bureau,
5916 Hollywood Boulevard,
Los Angeles, California.

Stanford Achievement Test (Forms D, E, F, G, and H)

Designed as a measure of subject-matter achievement in Grades 2 through 9. Three batteries, each covering approximately three grades, are available in five different but equivalent forms. Subject-matter tests included in the battery may be purchased individually. Tests for Grade 4 and above can be either machine-scored or hand-scored.

Reliability: Reliability coefficients for single grade levels for the various batteries range from .96 upward. Although some individual tests are not as reliable as the battery they make up, their reliability appears to be satisfactory for guidance purposes.

Validity: The publisher's catalog says: "Curricular validity is assured by a detailed analysis of the important elements in each subject-matter field of the modern curriculum and the statistical evaluation of a large number of varied items." Nevertheless, a local school must determine the validity of this test in

terms of achievement as developed through its current curriculum.

Norms: The publisher furnishes two types of grade equivalent norms: (1) norms based on groups from which accelerated and retarded pupils have been removed, and (2) traditional norms based on all students in the population tested.

Authors: T. L. Kelley, G. M. Ruch, and L. M. Terman.

Publisher: World Book Company,
Yonkers-on-Hudson 5, New York.

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The Scatter-Diagram as an Aid to Diagnosis

A FIRST principle of education is that students should *work up to capacity in a meaningful course of study*. Everyone responsible for education tries to achieve this result by various techniques or procedures. But, in the opening statement, three words, *work*, *capacity*, and *meaningful*, point to the root of many educational problems. How do educators set the stage so that students can work or learn efficiently? What factors interfere with learning? How good are examinations for measuring work accomplished? How long do students remember or retain what they learn at the job of getting educated?

Teachers sometimes work like slaves to "get across" to students that organized body of knowledge or skills called the content of a course. Yet after one, two, three, or more years, how much do students retain? Because of the curve of normal forgetting and the impact of later activities, students recall and apply a pathetically small percentage of all the facts they were so hopefully taught.

ARE STUDENTS WORKING UP TO CAPACITY?

Because capacity is not an easy thing to judge, the counselor needs to observe, interview, and test students carefully to make adequate judgments about their scholastic abilities. The data upon which he bases such judgments must be carefully weighed. Thus, the counselor asks: "Is there some personal problem, teacher deficiency, or motivational problem which prevents the student from using his capacity efficiently in the learning process? Is his score on a mental ability test affected by a temporary condition such as a remediable disability in reading?"

The counselor also needs to consider the idea of a meaningful course of study. Some persons think that only vocational training is meaningful. Others believe that the general academic course or college preparatory course is the only road to success. Also, all kinds of out-of-school groups believe that they know what education should mean. They hammer away at such concepts as Americanism, thrift, safety, good health habits, or a form of job insurance through vocational training at a higher level than the parents achieved.

To the question, "Where should education lead?" there is no set pattern of answers—no universal chart by which education can be steered. It is probably just as well that this is so, since each school can best work out the chart which fits the needs of its students and the needs of the community it serves.

Although a staff member like his school must decide where education should lead, every counselor faces this key question: "How can I find out whether a student is working up to capacity?" One of the best ways to do this is to compare that student's achievement with his ability. If the achievement is "in line" with the ability, then the student is said to be working up to capacity.

THE SCATTER DIAGRAM THROWS LIGHT ON STUDENTS

A good method of determining whether students are working up to capacity is illustrated in Table 19. It lists the A.C.F. (American Council on Education) test scores and the honor point ratios for 50 students from School A. These data are the same as those used for illustrative purposes in Chapters 2 and 3. The last line in the table shows that the mean A.C.F. score is 73.7, and that the mean honor point ratio is 2.47.

In Table 19 it is evident that John Adams, the first student named in the list, has a test score and an honor point ratio which are much above their respective means. The next student, Anna Anderson, has a test score below the mean and an honor point ratio also below the mean. But George Arndt presents a different picture. His *capacity* as measured by the A.C.F. test is below the mean, but his *achievement* as measured by the honor point ratio is above the mean. The discrepancy between

TABLE 19

LIST OF STUDENTS IN SCHOOL A, SHOWING THEIR SCHOLASTIC ABILITY TEST SCORES
AND HONOR POINT RATIOS OR GRADE AVERAGES

Name of Student	A.C.E. Test Score	Honor Point Ratio or Grade Average
1. Adams, John	114	3.55
2. Anderson, Anna	66	2.26
3. Arndt, George	65	3.00
4. Bennett, Virginia	77	2.58
5. Brown, Fred	39	1.58
6. Butler, June	56	2.08
7. Chalmers, Mary	87	1.50
8. Chamberlain, Richard	31	2.58
9. Collins, Diana	56	2.75
10. Cummins, Lois	34	2.00
11. Daly, Robert	94	3.00
12. Daniels, Henry	41	3.41
13. Donaldson, David	65	2.84
14. Decker, Harriet	79	2.53
15. Dunn, Muriel	36	2.33
16. Emerson, Bill	110	2.59
17. Fairfax, James	72	1.24
18. Forsythe, Arvilla	55	1.01
19. Garfield, Marie	115	2.83
20. Golden, Louis	75	2.47
21. Griffiths, Dora	85	2.84
22. Hardesty, Geraldine	54	2.63
23. Heigle, Helen	60	2.00
24. Hoffman, Raymond	100	3.64
25. Hunsaker, Fritz	64	2.09
26. Jennings, Clifford	48	1.54
27. Kalb, Karl	84	3.42
28. King, Wilma	59	3.28
29. Lane, Walter	81	1.84
30. Lieberman, Irving	65	2.07
31. Lyles, Harry	65	1.43
32. Martin, Royce	95	3.63
33. McDuffie, Sandra	39	1.80
34. Michael, Patricia	114	2.87
35. Moore, John	113	2.63
36. Nance, Jacob	82	3.65
37. O'Brien, Ruth	55	2.84
38. Parker, Lloyd	89	2.82
39. Pierce, Donald	55	1.40
40. Purcell, Mary	108	2.84
41. Richard, Ethel	84	2.60
42. Roland, Roy	87	2.69
43. Sanders, Sylvia	66	2.45
44. Sears, Hollis	85	1.67
45. Silverman, Eugene	79	2.24
46. Snyder, Helene	95	2.63
47. Stewart, Alma	78	1.62
48. Talbert, Nellie	85	3.01
49. Thrasher, Ella	65	2.44
50. Williams, Michael	77	2.66
Total	3683	123.40
Mean	73.7	2.47

these two measures is striking. It indicates that George is achieving much more than expected from a person of his capacity. Mary Chalmers, the seventh student, presents a picture at the opposite extreme of that presented by George. Her measured *capacity* exceeds the mean, while her *achievement* is below the mean. This student does not appear to be doing as well as expected. A similar illuminating comparison could be made for each of the other students.

This simple method of comparing capacity and achievement is useful but crude. It fails to identify many students who, although the disparity between their capacity and achievement is not great, should receive special attention. The method can be improved by ranking students first, in the order of their test scores, and second, in the order of their honor point ratios. Then a student's rank in ability can be compared directly with his rank in achievement. The method can also be improved through the application of other statistical procedures. For example, the deviation of a student's score or ratio from the mean can be converted into a standard score. To obtain the latter the difference between the score and its mean is divided by the standard deviation of the distribution.

As pointed out earlier, a highly effective method of presenting two sets of data about students is the scatter-diagram. This visual device is a definite aid to individual diagnosis. The reader will note that the data portrayed in Figure 15 are the same as those pictured in the scatter-diagram in Figure 5 in Chapter 3. There the method of constructing such a diagram was described.

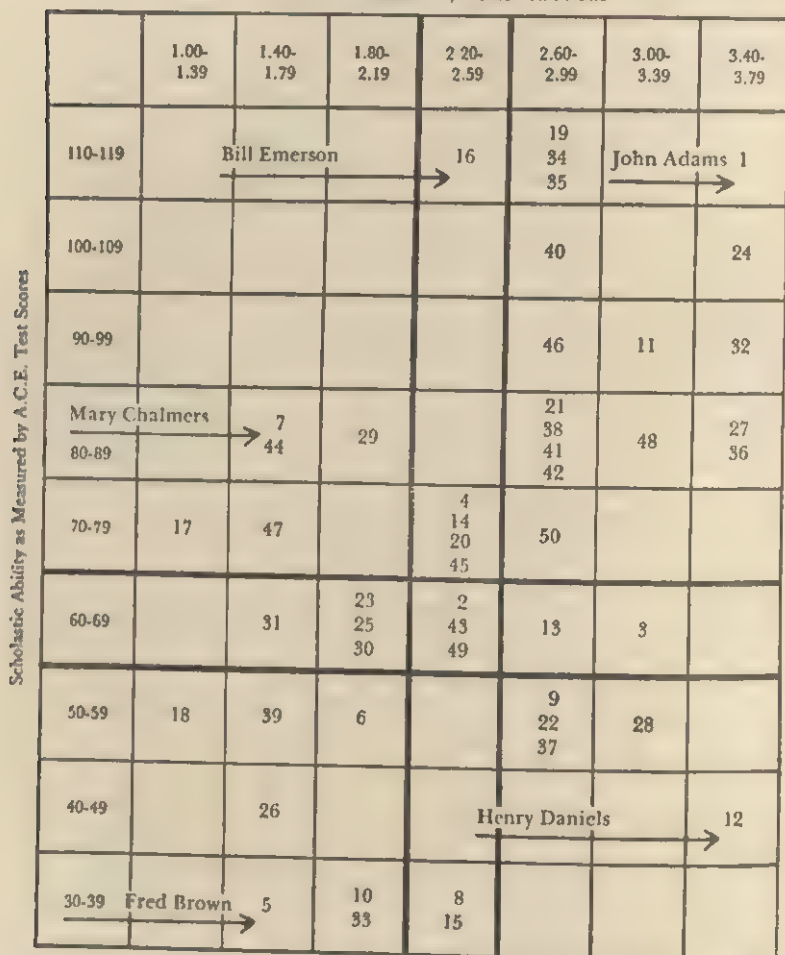
The same two sets of scores are shown in Table 19 and Figure 15. To identify each student, he was assigned a number in the table. To indicate the entry which represents the pair of scores made by a particular student, this same number is used in the figure. Thus, John Adams' designation in Figure 15 is the numeral 1; that of Anna Anderson, 2; that of George Arndt, 3; and so on through the list. This system, of course, makes it possible to locate quickly and accurately the student's position in Figure 15.

In the scatter-diagram in Figure 15 the pair of heavy horizontal lines encloses the class interval containing the mean

FIGURE 15

SCATTER-DIAGRAM OF A.C.E. TEST SCORES (MEAN = 73.7) AND HONOR POINT RATIOS (MEAN = 2.47) OF 50 STUDENTS IN SCHOOL A

Achievement as Measured by Honor Point Ratio



(73.7) of the A.C.E. test scores. The pair of heavy vertical lines marks the class interval containing the mean (2.47) of the honor point ratios. The two pairs of lines divide the scatter-diagram into four sections or quadrants.

With these lines as guides, it is possible to describe the performance of students more clearly. All students who are above the mean interval in ability and below (to the left of) the mean interval in achievement may be called "underachievers." Mary Chalmers (student number 7) is one such underachiever. Her test score of 87 is considerably above the mean, but her honor point ratio is only 1.50, about a D+ average.

Those students who are below the mean interval in ability and above (to the right of) the mean interval in achievement may be called "overachievers." Henry Daniels (student number 12) is one such overachiever. Note that his test score of 41 is far below the mean, but his honor point ratio of 3.41 is approximately equivalent to a B+ average.

Like John Adams (student number 1), most of the students who are in the upper right section of the scatter-diagram are assumed to be getting along well enough academically. But conclusions about Bill Emerson (student number 16) are not as clear-cut. His test score is 110, considerably above the mean, while his honor point ratio is only 2.59, just barely above average. Is he an underachiever in terms of what he *could* be doing?

WHAT CAN BE DONE FOR THE "SLOW" STUDENT?

Some teachers assume that the students who, like Fred Brown (student number 5), are in the lower left section of the diagram are hopeless academically because they are "not quite bright." These teachers sigh and say that such students, like the poor, are always with us—at least until they pile up so many low grades that sheer discouragement and despair drive them out of school. "What's the use?" the everfailing Fred exclaims, "I might as well quit school and go to work." And he soon does just that.

But what if an imaginative and sympathetic group of teachers designed special curricular offerings for such students as Fred! Of course, some teachers might fear that this would be "lowering standards"—the cardinal educational sin! But there are schools where teachers have modified the general academic courses or have started special new courses in which students

like Fred can do well and be happy. Students who are not academically-minded stay in such a school longer than they do in a school where they are looked upon as a necessary evil; moreover, they come out better equipped to cope with life's demands.

Schools which provide meaningful learning experiences for students like Fred are, in a very real sense, working toward one of the main objectives of the "Life Adjustment Education" movement. In these schools, furthermore, a good counselor identifies such students early in their academic careers, that is, before they become discouraged by repeated failure. He also helps them plan for the most appropriate use of the schooling available to them.

WHAT ARE THE LIMITATIONS OF THE SCATTER-DIAGRAM?

Before considering further the use of the scatter-diagram, certain limitations of the technique merit attention. First of all, it must be recognized, the scatter-diagram portrays measures of ability and achievement which may contain errors. The nature of errors which enter into such measures was discussed in the chapters dealing with scholastic ability and achievement. In this connection, Froehlich and Benson comment on the assumptions underlying the scatter-diagram in these words: "The measure of achievement is assumed to be reliable (consistent) and valid. As a matter of fact, measures of achievement are not perfectly reliable nor always valid. Consequently, we must expect some error. It can be expected, for example, that Joel's raw score on an achievement test may vary 5 or 10 points. In constructing a scatter-diagram, this might well put Joel in the underachievement group when actually he should be in the normal group. The same kind of error can occur because the test does not measure achievement only. . . . A test in chemistry may require considerable reading ability so that poor readers make poor scores, not because they do not know chemistry, but because they cannot read fast enough to get the problems done in the time allotted. In such a case, classifying the pupil as an underachiever in chemistry is inaccurate. These two sources of

error must be considered constantly when it comes to the interpretation of scatter-diagrams.

"Measures of ability are affected by the same source of error as measures of achievement. Thus, we have to consider both our measures as approximates rather than absolutes. One way to think of it is to consider the dot (tally mark for each student) on the scatter-diagram as the center of a circle. The lower the reliability and validity of either the measure of ability or achievement, the larger the circle. Somewhere within the circle lies the true score, but the circle may be so large that it covers half the scatter-diagram. With even the best of tests, the circle has a diameter so great that we can hardly trust the identification of students that fall near the boundary lines of our quadrants."¹

One of the principal objections to the scatter-diagram method is its heavy emphasis upon scholastic achievement. Persons who raise this objection point out that the school should be equally concerned with the students' achievement in other areas, such as health, morality, ethical practices, human relations, and leisure-time activities. They also contend that there is danger that teachers will use evidence of a discrepancy between capacity and achievement to goad underachieving students already in academic difficulty to the detriment of their mental health.

In an excellent discussion of this method of studying students, Germane and Germane present this rebuttal: "If the values inherent in the [scatter-diagram method] were fully realized by the teacher, this realization would be the factor most effective in enlarging her conception of the need for knowing the whole individual before attempting to teach him further. The deviation between his ability to learn and his actual achievement would motivate her to help the student to discover the many forces in his life that were standing in the way of his proper scholastic achievement. In a particular case, the frustrations in the student's life might be in many and in different areas of experiencing—some of them almost insurmountable. But whatever the obstacles, they would now be known by both

¹Clifford P. Froehlich and Arthur L. Benson, *Guidance Testing* (Chicago: Science Research Associates, 1948), p. 59.

teacher and student. Sympathy and understanding would result and a sound foundation laid for growth not only in intellectual achievement but in all areas concerned."²

The counselor, of course, should keep the limitations of the scatter-diagram in mind. If the scatter diagram is used with the same prudence with which all guidance techniques and tools should be employed, that diagram can make a valuable and unique contribution to the understanding of students.

WHY DO STUDENTS UNDERACHIEVE?

Teachers are always concerned about students who "don't do as well as they're capable of doing," such as those found in the upper left-hand corner of the scatter-diagram in Figure 15. This section considers a few of the many reasons why students do not do as well in their schoolwork as they seem capable of doing.

Take, for example, the following students all of whom are underachievers, but who underachieve for widely different reasons. Suppose one type of student antagonizes most of his teachers; he and they engage in a series of personality clashes. Because of the personal feelings aroused, the teachers consciously or unconsciously mark this student down. However, is he really an underachiever? Suppose another type of student is working long hours outside of school to help the family finances. Or, suppose a third type of student lacks reading skills, or arithmetic fundamentals, or English skills for certain subjects.

Teachers agree that a fourth type of student whose grades fall below average does not work hard enough; they say: "He is just plain lazy." Since there probably is no such thing as inborn or changeless "laziness," this student's teachers rather should ask: "Why doesn't he apply himself to schoolwork?" What if this student has poor health and is physically unable to concentrate on the task at hand? What if he is employing inefficient study habits, even though he studies hard? What if he is so upset by a personal problem that he cannot succeed in his studies? One or more of these factors may result in apparent underachievement.

²Charles E. Germane and Edith G. Germane, *Personnel Work in High School* (New York: Silver Burdett Company, 1941), pp. 113-114.

A fifth kind of student, one with better-than-average ability, may appear to underachieve simply because classroom work is his least inspiring activity. He knows most of what the teacher is discussing. He has a driving interest in some hobby or other line of activity which opens up much more interesting paths to new kinds of knowledge than does his schoolwork. In dealing with such a student, educators all too often seem to forget that they are competing with other individuals or agencies for a share of the enthusiasm and interest that this type of student can show when motivated.

A sixth kind of student who underachieves may be emotionally confused or upset. He may withdraw from unpleasant realities by daydreaming, or he may seek attention by making trouble or by bullying smaller children. He may feel lonely, he may be snubbed by other students because of some difference in appearance, dress, or background. He may come to school each morning directly from an exhausting emotional scene between maladjusted parents.

At times, teachers and counselors identify a student who just seems to be "coasting along," with a minimum of effort. They lecture or exhort him about developing good work habits and about "shunning the easy way"; but such techniques appear to have no beneficial effect whatever on the student. That such techniques do not work is not surprising when it is remembered that adolescents like adults tend to respond negatively to hortatory appeals.

In working with underachieving students, teachers and counselors might well learn from the results of certain experimental studies in industry. These studies show that adults, competent in their jobs, make startling increases in output when working conditions were improved, when rewards were set up, or when competition was increased. These studies also point out that *restriction* in output often occurs in situations where management and labor do not work harmoniously. New and eager workers on assembly lines have been "slowed down" by their fellow workers to keep the whole process from being speeded up. At times adolescents show this same tendency. By open or silent disapproval they "slow down" a student who makes high marks. As a result, this potentially superior student would rather get

marks below his ability level than to be pointed out as "teacher's pet." This type of underachievement can be overcome best by making schoolwork intrinsically more interesting and more fun. If it becomes so, both student accomplishment and morale tend to go up.

Sensitive teachers often are acutely aware of underachievers and their problems. They know that sometimes their words fall on heedless ears; yet some of them do not know how to search out the underlying sources of students' problems. Here a counselor has a real opportunity to be of assistance to teachers. Because he has specialized techniques at his command and, equally important, because he has time in which to work individually with students, he can analyze students' problems and their basic causes. In co-operation with these students and their teachers, the counselor can assist in planning for the alleviation if not the solution of such problems.

Certainly one paramount idea should be stressed here. Underachievement is most often a sign that something is out of gear in the adolescent's life or environment. This underachievement is the symptom of the student's problems, not the problem itself.

Finally, on the subject of underachievement, the counselor who interprets a scatter diagram should recognize the following possibility. A student may have cheated on the test of scholastic aptitude, because of careless test supervision and administration. Therefore, when his test score is compared with his average school marks, he may appear to be an underachiever, although he is really not one. Because he makes a spuriously high score on the test, his tally lands in the upper left corner of the scatter-diagram instead of in the lower left corner where it belongs.

WHY DO STUDENTS OVERACHIEVE?

Now consider the students who are below average in ability and above average in achievement. They are found in the other sparsely settled quadrant, the lower right section of the scatter-diagram. If a student has been carelessly tested or if he did not understand the test instructions, his ability test score may be too low; and, therefore, he looks like an overachiever when his marks are averaged. In such cases the appearance of over-

achievement has been due to an error of measurement. If a student is deficient in such skills as speed of reading or comprehension of material read, he will make an inadequate score, particularly on a test which has a relatively short time limit. With more time available, such a student may find that his reading disability is less of a handicap in studying than in taking a test. That is why that student's marks are often a truer reflection of his use of his ability than are test scores.

There are other reasons for apparent overachievement. Some students, as mentioned before, manage to ingratiate teachers and as a result receive low grades. Other students make such good impressions on their teachers that they receive high grades for good behavior and pleasant personality rather than for knowledge of subject matter. Assuming that a test truly measures ability, then, if students with below average test scores receive above average marks because of their attractive personalities, these students will seem to be overachievers.

Two types of students are truly overachievers by virtue of their own extraordinary efforts. Some of these students may be driven to concentrated and even excessive studying because they want to 'show up' the children who have snubbed them or kept them out of social or athletic activities. Others of these students may have extremely efficient study habits which compensate for their relatively low abilities.

How long can such overachievers keep up their efforts to work above their capacities? How will these efforts affect them in the long run? Consider the bookworm who tries to win approval by 'grinding' to make good marks. He may be developing undesirable personality traits which will so outweigh good marks that he fails to find the job he wants and is well qualified for. The skillful and regular student, furthermore, is likely to meet tougher competition in the next higher educational level. Suppose that even his efficient use of study skills does not result in passing work. What will be his reaction then? Alert counselors try to identify these students early in order to help them plan for further schooling where they will not be hopelessly outclassed.

AID FOR STUDENTS WHO ARE ACHIEVING UP TO
CAPACITY

From the statistical point of view, the students in the lower left corner and upper right corner of Figure 15 are working "up to capacity." But does this mean that teachers and counselors can afford to overlook them? Obviously not!

Look at the students who are below average in both ability and achievement. Surely they are working up to capacity, but they include a large percentage of students who will drop out before graduation. Thus, these students will be marked as failures. They also will be incompletely educated and poorly prepared to face the out-of-school life into which their failing marks have pushed them.

As long as general academic courses comprise the major portion of the school curriculum, this group of students will be unduly large. As long as they experience failures even when putting forth their best efforts, schoolwork is bound to be frustrating and unsatisfying for them. They leave school and go on, as they must, to make their adjustments to living in a competitive world where abstract academic ability is not the only steppingstone to success. The school would better meet the needs of these students if it overcame its preoccupation with success in the so-called general academic or college preparatory courses, and if it also included competitive situations in which these students could gain success.

A school really does not solve the problems of such students if it sidetracks them into commercial or trade courses, on this often false assumption: If they cannot use their heads, they can use their hands. Commercial and trade courses have definite functions to perform in developing worthwhile experiences for the large majority of students whose education ends at Grade 12; therefore, such courses should never be considered the dumping ground for students who are not successful in other academic work.

As a matter of fact, many students who are poor generally in schoolwork cannot hope to receive substantially greater benefits from vocational training than from other kinds of training. It is time for the teachers of both academic and non-academic subjects to co-operate in setting up as many different educa-

tional experiences as possible for these "slow" students and for other students as well.

The group in the lower left quadrant of the scatter diagram in Figure 15 will include those students who unfortunately have a combination of low ability and personality conflicts growing out of repeated failures. Because some schools lack flexibility in their methods of marking or in their selection of content and methods, counselors may not be able to help these students very much. But the counselor who works with such students as individuals cannot avoid being upset at education's failure to prepare them adequately for young adulthood. One of the most important criteria of a good school system is the provision it makes for the adequate and stimulating education of its low ability students—by differential marking scales and by differentiated courses of study.

A commonly used solution to the problem is "class sectioning" on the basis of ability. Yet this solution is relatively ineffective, *if* slow learners are taught the same content as are fast learners, and *if* slow learners are held to the same standards of proficiency in mastering course content as are fast ones.

Let us turn now to the possible problems of the bright students. While they are less troubled by the educational problems that confront slower students, they do face one other broad class of problem, vocational in nature. This may later prove to be a stumbling block for them. The counselor can usually consider vocational choices right away with these students; with slower students, he may have to consider more immediate educational problems before taking up vocational matters.

If bright students are taking the general or academic high school course, as most of them do, they may be making vocational choices without opportunities for trying out their abilities and interests. Therefore, even though many of these students are working "up to capacity" at present, they may be headed for a job situation or college situation in which they may find **adjustment difficult.**

In this connection, consider the admittedly small percentage of high-school graduates who go on to college. Throughout the country this figure probably does not exceed 25 percent. Yet

of this small percentage, *about 60 percent will not complete the college training they start*. Some of these college drop-outs might be prevented if high-school teachers and counselors were more effective personnel workers!

Superior students like Bill Emerson (student number 16 in the scatter-diagram, Figure 15) may drift along or be slowed down by the average speed of their class in high school. There is indication that even now Bill is not achieving as well as he could. Perhaps he has already begun to "take it easy" and to use poor study habits. But special class assignments and other stimulating intellectual activities can challenge students like Bill to work up to capacity and can prevent them from developing poor study habits which may cause failure later. In planning such activities for these students, counselors and teachers can be of mutual assistance.

At times, a counselor or teacher will want to construct a scatter-diagram for a single subject such as English or chemistry, rather than for over-all achievement as represented by honor point ratios based upon many different subjects of study. In preparing his scatter-diagram, the teacher or counselor can use the scores made on a test of scholastic aptitude as one axis. As the other axis he can employ scores on a standardized achievement test. Such a diagram comparing scholastic ability and achievement in a single subject is particularly valuable when dealing with high ability students whose general achievement is superior. Such a diagram of a group helps to identify those otherwise able students who have a deficiency in the subject under consideration. Once a bright student and his deficiency are identified, the counselor can work toward helping the student to overcome that disability; or, if this appears impossible, he can help the student to make plans to avoid subjects in which his disability is a definite handicap.

Consider next another problem found among "up-to-capacity" students, a problem they will face whether they expect to go to work or to college after high school. What kinds of personal and social adjustments will these students probably have to make when they leave high school? With reference to adjustments on the job, studies in industry show that a substantial proportion of the workers who are fired or who quit leave *not*

because they are incompetent on the job, but because they cannot get along happily and peacefully with others or with themselves. Thus, for the youth who is on the job or in the training process, personality development has a dollars-and-cents value as well as a philosophic value. For this reason, among others, personality development is a responsibility of the school. It can meet this responsibility through such means as improvement of marking systems, enrichment of activity programs, greater participation in student government, and betterment of student-teacher relations. Thus, the part the school plays in fostering personality growth is consciously constructive.

Many questions have been raised here concerning the adjustment of students in the "up-to-capacity" group. This has been done because educators are prone to overlook the possible existence of *any* problems in this group.

Counselors and teachers should also ask themselves if graduates or withdrawals from their schools are well adjusted socially. Before these students leave, are they adequately educated to solve the problems of sex adjustment? Will they be able to make a satisfactory emotional adjustment when they have to leave home and family to go to work or to college? Are they prepared to engage in activities which challenge their interests? Such questions are increasingly important, and they must be raised about every student in a group whether he is an over-achiever or an underachiever, or is achieving at or near his capacity. Asking these questions brings the scatter-diagram to life and indicates how this diagram may be used as an effective approach to individual problems.

SUMMARY

Even at best, the scatter-diagram alone is not sufficient to diagnose or to solve student problems. Additional tools and techniques must be employed. Some of these have been discussed in previous chapters. Others are considered in succeeding chapters, including Chapter 13, which considers the area of student interests.

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Identifying Interests

THE identification of interests has received much attention in the last three decades. Although many valuable research studies dealing with interests are available, they leave unanswered questions. Thus, a counselor may have at hand the data from an interest inventory or questionnaire but his interpretations of these data are not always based upon relationships demonstrated in the research literature. Therefore, his interpretations are frequently "best guesses" supported by piecemeal evidence, rather than conclusions drawn from an integrated body of verifiable knowledge. All this clearly means that the making of judgments about an individual's interests, whether done on the basis of test data or information gathered by non-test methods, is probably one of the most difficult and confusing aspects of guidance work. For this reason, the beginning counselor particularly should interpret interest data with the greatest possible care and thoughtfulness.

WHAT ARE INTERESTS?

Interests may be thought of as one of the forces that motivate activity. In other words, they represent a tendency to select one activity or thing in preference to something else, to choose one instead of another. Said even more simply, interests are likes.

That persons have different interests in life's many activities is a basic premise in the study of interests. One boy, for example, may at a certain stage in his life find making and operating model railways an absorbing interest. He may devote a major portion of his free time to this activity. Another boy,

however, may prefer baseball, stamp collecting, or raising chickens. These examples serve to point out that there are individual differences in interests just as in mental ability and achievement.

Persons also have varying degrees of interest in any one activity. The amounts of their interest in this activity may be thought of as points on a continuous scale that ranges from "downright aversion" through "neutral" to "complete absorption." With this scale in mind, it is clear that knowledge of the degree of a given interest possessed by a particular person provides another insight into his uniqueness. That uniqueness, moreover, is displayed not only in one interest but in many other interests that also vary in intensity. To return to the example of the boy railroader, he will have other interests that differ in their intensity. He may be "very interested" in science, shopwork, and reading; "moderately interested" in model ship-building and his paper route; "slightly interested" in Boy Scouts and baseball; and "not interested" in algebra, horse racing, and girls.

Because people's interests vary in kind and degree, an exact knowledge of these interests and their relative strengths is highly important. Said another way, persons differ from each other in the nature and extent of their interests in life activities. Each person has interests which vary in degrees of intensity. Thus, several questions concerning an individual's interests are to the point: What are the person's interests? How does his interest in one activity compare with his interest in other activities? How does his degree of interest in a given activity compare with that of other persons? Will his interests change a great deal with the passage of time?

WHY SHOULD INTERESTS BE IDENTIFIED?

For interest to be a useful part of the counseling process, evidence bearing on the nature of the individual's interests must be collected. Jager and Froehlich have described four ways of obtaining such information which may be paraphrased as: (1) observing the individual, (2) getting his expressions of interests,

(3) studying the activities in which he has engaged, and (4) measuring his interests by means of an interest inventory.¹

Super has proposed a similar classification of ways of studying interests, with one major difference. For "observation" (point 1 above), he substitutes "tested interest," which refers to the results of objective measures of achievement. In recommending the use of such tests as a source of evidence about interests, Super has stated: "Since interest in a vocation is likely to manifest itself in action, it should also result in an accumulation of relevant information."²

In discussing three concepts of interest, Strong has declared: "Interest may be viewed as a single expression, such as 'I like arithmetic,' or 'I am planning to be an engineer.' Second, interest may be considered to be a general tendency toward a constellation of items, as when we state that a man has mechanical or scientific interests. Third, interest may be thought of as the total score on an interest inventory, as when he is said to have the interests of an engineer or lawyer."³

Out of the variety of means of ascertaining interest grows one of the most perplexing characteristics of interest research. According to this research, the various means of identifying interests do not seem to yield comparable data. In fact, at times, they provide conflicting information. Consider, for example, Strong's first and third points. A person may express a single interest in becoming a lawyer, yet this expression may not be confirmed by his scores on an interest inventory. This situation is so frequently found that, in a list of common counseling problems, Williamson and Darley have labeled it "discrepancy between claimed and measured interest."⁴ Because this problem is common and significant, a counselor must be able to collect and evaluate the evidence derived from the various sources that bear on the determination of student interests. The methods of

¹Harry A. Jager and Clifford P. Froehlich, "Guidance Tools for Vocational Shop Instructors," *Vocational Instructors' Shop Handbook*, VIII (Fall, 1947), 12-14.

²Donald E. Super, *Appraising Vocational Fitness by Means of Psychological Tests* (New York: Harper and Brothers, 1949), p. 378.

³E. K. Strong, *Vocational Interests of Men and Women* (Stanford, California: Stanford University Press, 1943), p. 19.

⁴By permission from *Student Personnel Work* by Williamson & Darley. Copyright, 1937. McGraw-Hill Book Company, Inc.

gathering and weighing such evidence are described briefly in the following pages.

HOW DOES OBSERVATION PROVIDE CLUES TO INTERESTS?

Observation, as pointed out in Chapter 4, can provide valuable clues to understanding a person's behavior. Because interest is such an important manifestation of behavior, observation is presented as the first method of determining students' interests.

Walk into any classroom and carefully watch the students. Inevitably you will see some who appear to be more interested than others. Certain students will seem keenly interested in what is going on. Many will be moderately interested. A few may appear totally disinterested or even bored. But what visual or other clues do you use in making such judgments regarding the relative interest of each student? You will be unable to name all the specific cues, but you can identify some of them. The outward signs of interest may become clearer by citing examples. If a student is interested in what he is doing, his attention is obviously centered on the task at hand. His eyes do not wander; he is not diverted by outside distractions. In an interview, the student's interest can be observed in his eagerness to discuss his favorite school subject and in his willingness to devote additional time to preferred activities. In thus estimating interests, it should be kept in mind, the observational method has its limitations. These limitations were discussed in Chapter 4.

The principal use of observed interests in understanding individuals is to confirm other evidence of these interests. During an interview, a student may claim, for example, an interest in dramatics. In making such a claim, he may have been influenced by going to movies, by seeing television shows, or by a host of other experiences. The strength of this student's claimed interest can be partially evaluated by observing his reactions to further questions on this matter. In doing so, the skilled interviewer not only listens to the student's answers and comments. He also notices the non-verbal clues which are sometimes as important as the verbal ones. To illustrate, as

the interview proceeds, the student may appear restless when the details of dramatic work are discussed. He may become defensive or sullen when pressed to consider the implications of his claimed interest. Through making such observations, a competent counselor seeks to verify a student's expressed interest.

WHY DO EXPRESSED INTERESTS NEED VERIFICATION?

One method of discovering an individual's interests is to ask him what they are. He may reply, "I like arithmetic," or "I am planning to be an engineer." These, of course, are expressions of interest, but as such they are of limited value. As Strong points out, these *single* expressions of interest may be quite unreliable and may lack permanence. One reason for this is that a person's statements regarding his interests may well be influenced by a number of factors such as the following.

Suppose a student is asked: "Would you like to go to college?" He may respond with a definite "Yes," because he feels that "going to college" is the thing to do, although he has no real interest in college training as such. Instead of responding to the real intent of the question, this student responds to the word "college"; to him this word symbolizes a respectable and hence a desirable activity. This student's expressed interest in college attendance may also be influenced by other factors such as parental pressure, overestimation of the dollar value of a college education, and desire for the prestige associated with being a college graduate.

The limited value of expressed interests of students has been summarized by Fowler in these words: "There are two chief arguments, both supported by ample studies, against dependence upon self-estimated interests in choosing an occupation. One of these arguments concerns the factors which interfere with making a realistic choice, factors leading students to declare occupational goals too hard to reach. . . . The second major argument . . . calls attention to the frequent disagreement between self-estimated and measured interests."⁵

⁵Fred M. Fowler, "Interest Measurement—Questions and Answers," *School Life*, December, 1945, p. 1.

Further to the point are the experiences of guidance centers serving adults. These centers see numerous persons who are vocational misfits, yet who are in the occupations which they chose and in which they claim to be interested. Among the most dramatic cases of this type was that of a bank cashier whom we shall call Mr. Smith. His daughter had been a client of one of the authors. A few weeks after contacts with the daughter ceased, her father came in ostensibly to talk about her plans. It was apparent that he was moderately successful in his position, that he had chosen this job while still in high school, but that he was not satisfied with his present work.

On the *Strong Vocational Interest Blank for Men*, Smith scored high on "business contact" scales (real estate and life insurance salesman) and showed little interest in the "business detail" scales (accountant, office clerk, etc.). When the results of the interest inventory were discussed with him, he reviewed the process by which he had arrived at the occupational choice of "bank cashier." Briefly this was his story.

During his early high-school years, Smith had many conflicts with his father, who ruled the household with an iron hand. His father seemed to fear and worry about only one man, and that was the cashier at the bank in their small town. He told his son what would happen to his business if the cashier called his loan. All of his activities and decisions seemed to hinge on efforts to repay the loan before the cashier called for it.

However Smith interpreted his father's fear, he decided to become a bank cashier. When he completed his training, he obtained a bank job, which he held for many years.

After the interviews and after considering the many angles, Smith secured a three-month leave of absence from the bank. During that period he tried his hand at selling real estate. At the end of the second month he resigned from the bank. His statement was something like this: "It is true I now make more than double what I used to, but that's just a small part of the story. I am a new man on this job. For the first time in my life, I look forward to going to work."

Not all persons who rely on self-estimates as a basis for selecting their occupations are unhappy with their choices. Some are indeed very happy. Nevertheless, the point of the fore-

going illustration is sound—self-estimates are often fallible bases for occupational decisions. That is why the counselor looks behind what a student says he wants to be when he grows up. In this connection, research has shown that in Grade 9 through Grade 12, about 50 of every 100 students change their stated occupational choices from one year to the next; only 25 of 100 students have the same stated choice at Grade 12 as they had in Grade 9. Therefore, this method of asking the student to name occupations in which he is interested yields results which are interesting but which may be unstable.

DO STUDENTS DO WHAT INTERESTS THEM?

The third method of indentifying a person's interests is to study his record of activities. The validity of this approach rests upon the assumption that a person is most likely to do what interests him.

At the outset it must be recognized that participation in an activity does not necessarily indicate an interest in it. A person may be a member of a bridge club, for example, not because of a fundamental interest in bridge, but rather because of the pleasure derived from this type of informal social gathering. Thus, the activity itself may be secondary; its concomitants, primary.

It should also be realized that lack of participation in an activity does not prove the absence of an interest. A person may have a definite interest in an activity, but may not participate in it for any of several reasons. First, he may have other interests which are so compelling or time-consuming that he has not time or energy left over to engage in the given activity. Second, he may face other conditions, such as financial problems, which prevent him from taking part in the activity. Despite these reservations, studying the record of an individual's activities can provide some real evidence of his interests.

Valuable clues to interests can be obtained from cumulative records. Because these records cover a period of years, they provide evidence regarding the interests themselves and the stability of these interests. If the records cover only one school year or two, however, the expressed interests reported thereon are subject to change and may therefore be unreliable.

If school records contain a cumulative report of a student's activities year by year, they are particularly valuable in indicating the nature and trend of that student's interests. Here is a student who claims a real interest in electrical work. His record shows that he demonstrated construction of a battery before the P.T.A., that he planned the field trip to the R.E.A. plant, that he was in charge of lighting for the stage crew, and that he engaged in other things electrical. In contrast, another student's record shows that he has been president of the literary society, editor of the school paper, and winner of two essay contests. These activities obviously indicate a strong literary interest.

If out-of-school as well as in-school activities are considered, they help to fill in the picture of a student's interests. Thus, reports of activities during summer vacations, part-time employment, and participation in other non-school functions are often revealing, especially if they fit into the pattern of the student's interests as shown by his school record and by his responses on interest inventories. Even if participation in these non-school activities is the result of accidental selection rather than of deliberate choice, the participation and the student's reaction to it can provide useful clues.

In their discussion of the third method of identifying interests, Jager and Frochlich pointed out that records of scholastic achievement provide valuable leads. They stated: "Since interest is the tendency to give sustained attention to an activity, be absorbed by it, and persist in it, it is natural that an individual will more likely excel in the activity that holds his interest. For that reason, *school grades*, unreliable as they are, do reveal clues to interests. One boy will, because of his interest, do outstanding work in science and math subjects, and mediocre work in English and history. He tends to do best in the subjects that he likes and perhaps in activities in which he can excel. . . . School grades alone are but one source of clues; all achievements and failures are important in revealing interests. Activities of a social nature, club work, class plays, athletics, recreation, school paper, hobbies, home activities, work history, and the kind of project that a boy undertakes in shop—all reveal the extent of an individual's achievement and interest. When these achievements are all placed together and studied,

patterns or types of activities may group themselves and stand out, and the interest back of these successes may then be ascertained."⁶

It should be recognized, of course, that the kind of marks which a student makes is influenced by many factors other than interest. Some of these factors were considered when the scatter-diagram was discussed in Chapter 12. Strong has summarized the interrelationship of these factors and interest in the following statement: "First, if a student has sufficient interest to elect a college course, his grade in it will depend far more on his intelligence, industry, and previous preparation than on his interest. . . . Second, interest affects the situation in causing the student to elect what he is interested in and to avoid courses in which he is not interested. When a student discovers he has mistakenly elected a course in which he has little interest, he will finish it about as well as other courses, but he will not elect further courses of a similar nature."⁷

WHY DO INVENTORIES HELP IDENTIFY INTERESTS?

The measurement of interests by means of interest inventories is a comparatively recent development. One of the first widely used interest inventories, constructed by Strong, has been on the market less than a quarter-century. Only in the last two decades have guidance workers begun to employ such inventories widely to get a clear picture of the nature and growth of interests.

Although the three methods of identifying interests previously described are valuable, it is generally recognized now that they provide data which should supplement rather than replace clues obtained from interest inventories. Unfortunately, it is not as well recognized that data from inventories should also be supplemented. Too frequently, the results of interest inventories are used in isolation, apparently on the assumption that they can stand alone and can tell the whole story. But the fact is that interest test scores have real meaning only when they are a part of a large body of knowledge about the individual.

⁶Jager and Froehlich, *op. cit.*, p. 14.

⁷Strong, *op. cit.*, p. 18.

The nature of interest inventories can be explained by considering two of the most widely used ones—the Strong *Vocational Interest Blank for Men* and the *Kuder Preference Record—Vocational*. Although alike in some respects, these two inventories differ in the manner in which they were constructed and in the kinds of scores which they yield.

WHAT IS THE STRONG VOCATIONAL INTEREST BLANK?

The *Vocational Interest Blank for Men* was originally published in 1927 and was last revised in 1938. It now consists of 400 items, arranged in eight groups. Five of the groups are lists of occupations, school subjects, amusements, activities, and peculiarities of people; to every item in these groups the individual responds "like," "indifferent," or "dislike." The other groups contain items which require the individual to indicate preference for certain vocational activities, to compare interest between two items, and to rate his present abilities and characteristics. As the inventory has no time limit, the individual is expected to respond to all items.

The scoring of this inventory by hand is such a tedious and time-consuming task that it is usually done by machine. Machine-scoring is available at numerous test service bureaus throughout the country.

In scoring the inventory, each item has weights assigned to its response positions. The weight may be either negative or positive; its direction and size depend upon how that item differentiates men-in-particular occupations from men-in-general. This method of weighting items is a distinguishing characteristic of Strong's blank and therefore deserves further consideration.

Briefly, here is how Strong determined the weights to be assigned a particular response to an item. He carefully selected a group of blanks which had been filled out by a typical group of men, whom Strong calls "men-in-general." This group may be thought of as the basic population. He then tabulated the responses of these men-in-general. He found, for example, that these men responded to the first item, "actor," in this manner: 21 percent liked it, 32 percent were indifferent, and 47 percent disliked it. When he tallied their responses to "architect," he

found that 37 percent indicated "like," 40 percent "indifferent," and 23 percent "dislike." Using this procedure, Strong obtained a picture of how men-in-general would respond to each of the items in his blank.

As the next step in determining weights for the items, Strong gave the blanks to successful men in various occupations and then tallied their responses to each of the items. To the item, "actor," the engineers answered thus: 9 percent responded "like," 31 percent "indifferent," and 60 percent "dislike." To the item "architect," the percentages responding "like," "indifferent," and "dislike" were, respectively, 58, 32, and 10.

With the foregoing information at hand for each of the items, Strong computed the differences between the percentages for men-in-general and for the engineer group. By use of a formula which takes into account the significance of difference between the two percentages, Strong then computed the weights to be assigned to each of the three possible responses to an item. These weights vary from -4 through 0 to $+4$. Roughly speaking, they are based on the degree to which the responses of engineers, for instance, are different from the responses of men-in-general. The procedures employed by Strong are illustrated by the data in Table 20.⁸

TABLE 20

DETERMINATION OF WEIGHTS FOR AN OCCUPATION INTEREST SCALE ON STRONG VOCATIONAL INTEREST BLANK FOR MEN

ITEM	PERCENTAGE OF MEN-IN-GENERAL TESTED			PERCENTAGE OF ENGINEERS TESTED			DIFFERENCES IN PERCENTAGE BETWEEN ENGINEERS AND MEN-IN-GENERAL			SCORING WEIGHTS FOR ENGINEERING SCALE		
	L	I	D	L	I	D	L	I	D	L	I	D
Actor (not movie)	21	32	47	9	31	60	-12	-1	+13	-1	0	1
Architect	37	40	23	58	32	10	+21	-8	-13	2	-1	-1

As the final step in constructing his scales, Strong converted the scoring weights into a scoring key. This key is used to weight an individual's responses. The more nearly his answers correspond to those of engineers, for example, the higher is his

⁸Strong, *op. cit.* Based on Table 2. p. 75

score on the engineering scale. The final scores thus obtained are converted into letter grades of A, B+, B, B-, C+, and C. The meaning of these grades is summarized by Strong in these words: "An A rating means the individual's interests agree very well with the interests of men in the occupation; a C rating means that there is no such agreement; whereas scores in the B range indicate the degree of approximation to A or C ratings. . . . Scores should never be viewed as conclusive. They should be considered as merely suggestive, taking into account all other information bearing upon one's vocational choice. Occupations rated A or B+ should be carefully considered before definitely deciding against them; occupations rated B- and C should be equally carefully considered before definitely deciding to enter them."⁹

The Strong inventory may now be scored for 39 occupations. A factor analysis by Strong, made at a time when only 36 scales were available, revealed that certain of these scales can be grouped together. The groupings of the specific occupations follow:

- | | |
|------------|--|
| Group I | Artist, psychologist, architect, physician, dentist |
| Group II | Mathematician, physicist, engineer, chemist |
| Group III | Production manager |
| Group IV | Aviator, farmer, carpenter, painter, mathematics-science teacher, policeman, forest service |
| Group V | YMCA physical director, personnel manager, YMCA secretary, social science teacher, school superintendent, minister |
| Group VI | Musician |
| Group VII | Certified public accountant |
| Group VIII | Accountant, office worker, purchasing agent, banker |
| Group IX | Sales manager, real estate salesman, life insurance salesman |
| Group X | Advertising man, lawyer, author-journalist |
| Group XI | President of manufacturing corporation |

Although Strong provides special scoring keys for Groups I, II, V, VIII, IX, and X, he hesitates to assign a single compre-

⁹Strong, *op. cit.*, p. 90.

hensive name to any of these groups. The reason for his hesitation appears in Group I, which contains some unexpected occupational bedfellows. Group II, however, can easily be described as a mathematical and physical science category. Even though the aforementioned groups are unnamed, their keys are primarily useful for reducing the scoring task. For instance, instead of scoring five separate occupational scales with as many keys, a group key can be used to determine whether pronounced interests are likely to be found among these five. Later in this chapter, Strong's grouping of scales will be shown to have value in helping to understand the nature of interests.

WHAT IS THE KUDER PREFERENCE RECORD— VOCATIONAL?

The basic assumption which guided Strong in the development of his inventory was that the interests of men in particular occupations could be distinguished from the interests of men-in-general. Other interest inventories, while not contradicting Strong's premises, are based on another assumption: Although a person's interests find expression in a multiplicity of activities, measurement of an individual's basic interests can be expressed in terms of relative strength of preference within the individual for certain broad categories of activity. Among such inventories is the *Kuder Preference Record—Vocational*, the most widely used inventory of this type. Two others are *Interest Questionnaire for High School Students* and *Occupational Interest Inventory*, which will be briefly described later in this chapter.

The *Kuder Preference Record* was originally published in 1939. At that time it could be scored for seven broad areas of interest. Since then much research has gone into subsequent revisions. In 1949, the name was changed to *Kuder Preference Record—Vocational* to distinguish it from an entirely new inventory, the *Kuder Preference Record—Personal*. The latter, as its title indicates, is designed to measure personal characteristics not covered by the vocational form.

The *Kuder Preference Record—Vocational* yields scores in the following broad areas of activity: outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social

service, and clerical. The blank contains 504 items, each offering three possible choices. The individual reads the three choices and indicates which he likes best and which he likes least. A typical item is:

- a. Develop new varieties of flowers
- b. Conduct advertising campaign for florists
- c. Take telephone orders in a florist shop

In this item, if an individual chooses "a" as liked, he receives credit toward his score in the scientific and artistic areas. If he chooses "b," he is credited toward the persuasive score. And if he chooses "c," he is credited toward the clerical score. By adding the credits, a total score is obtained for each area of vocational interest. The scoring is facilitated by an ingenious answer pad; this pad can be completely scored in about five minutes. Furthermore, instructions are provided so that the individual taking the inventory can do his own scoring. The scores obtained are then converted to percentile ranks based on the responses of so-called "people-in-general."

It should further be noted that the Kuder yields scores which can only be interpreted by comparison with the scores made by persons in broad categories, such as high-school girls or male adults. In other words, the Kuder scores are not interpretable, as are those obtained by the Strong blank, in terms of similarity to specific occupational groups. The Kuder manual, however, presents a few data which show that persons in particular occupations tend to receive relatively higher scores in the corresponding Kuder areas to which their occupations are logically assigned. At the present time Kuder is developing additional occupational data of this type. He is also devising formulae for obtaining occupational scores similar to those of Strong. These formulae follow Strong's pattern of procedure; for instance, they take into account differences between men-in-general and men in a specific occupation.

Consideration of the process of constructing the Kuder inventory will make the nature of its scores clearer and more meaningful. The first step was to prepare a large number of items which logically appeared to measure preference for activities in a certain area such as scientific activity. These items were then given to an unselected group of people and were scored

according to an *a priori* key. This key was necessarily based on the author's *judgment* of the kind of responses which indicated scientific interest. Each of the items was then analyzed in terms of its ability to discriminate between persons who made high and low scores on the *a priori* key. An item which discriminated was retained; one which did not was discarded. Thus, the responses to items intended to measure interest in the scientific area were consistent with each other. The pattern of these responses was then embodied in the scoring key for the scientific area of interest. This process was repeated in covering each of the other broad areas of interest.

Next Kuder developed a scale of scores for each of seven interest areas. He then found that these scales were reasonably independent of each other. The intercorrelations among the seven scales ranged from .19 between the scientific and computational scales to $-.34$ between the scientific and persuasive scales.

Since the original manual was published Kuder has developed three additional scales. These scales have somewhat higher intercorrelations than did the original scales, yet these newer scales are sufficiently independent to be regarded as measuring separate areas of interest.

Scores on the Kuder inventory can be interpreted as indicating the relative degree of interest which a person has in each of the areas given.

A COMPARISON OF THE STRONG AND KUDER INVENTORIES

A number of studies dealing with the relationships between scores from the Strong blank and scores from the Kuder Record have been reported by Triggs.¹⁰ Some of these relationships, in the form of coefficients of correlation, are shown in Table 21. For the two inventories, all the coefficients of correlation be-

¹⁰Frances O. Triggs, "A Study of the Relation of Kuder Preference Record Scores to Various Other Measures," *Educational and Psychological Measurement*, III, (1943), 341-354.

_____, "A Further Comparison of Interest Measurement by the Kuder Preference Record and the Strong Vocational Interest Blank for Men," *Journal of Educational Research*, XXXVII, (1944), 538-544.

_____, "A Further Comparison of Interest Measurement by the Kuder Preference Record and the Strong Vocational Interest Blank for Women," *Journal of Educational Research*, XXXVIII, (1944), 193-200.

tween the scores on the scales for like occupations or occupational areas are positive, as might be logically expected. Yet it is quite clear that these coefficients do not indicate relationships sufficiently high to assume that for a given occupational interest area the scale of one inventory may be substituted for that of the other. Nevertheless, the relationships displayed in Table 21 shed light upon what is being measured by each interest scale.

TABLE 21

CORRELATIONS BETWEEN KUDER AND STRONG SCALES, FROM TRIGGS'S STUDIES

STRONG SCALE	KUDER SCALES	
	Science	Mechanical
Physician .....	.50	
Psychologist .....	.36	
Engineer .....	.54	.72
Chemist .....	.73	.51
Carpenter .....	.26	.67
Math-Science Teacher .....	.47	.46
	Social Service	
Y.M.C.A. Secretary .....	.35	
Social Science Teacher .....	.30	
City School Superintendent .....	.42	
	Computational	Clerical
Accountant .....	.49	.55
Office Worker .....	.25	.38
	Persuasive	
Life Insurance Salesman .....	.58	
	Literary	
Lawyer .....	.50	
Author-Journalist .....	.28	

After analyzing the available evidence, Super¹¹ reached the following conclusions, some of which are necessarily in the form of hypotheses. He believes, for example, that the Kuder scientific scale measures a more theoretical and laboratory interest than does the Kuder mechanical scale. He suggests, therefore, that when counseling a prospective engineer, more attention should be given to his standing on the mechanical scale, but when counseling a prospective chemist, more significance should be accorded to his standing on the scientific scale. The

¹¹Super, *op. cit.*, p. 463-465.

correlation between Kuder's literary scale and Strong's lawyer scale is higher than the correlation between Kuder's literary scale and Strong's author-journalist scale. This suggests that Kuder's scale is probably more valid for assessing legal interests than for assessing literary interests.

WHAT ARE THE BASIC INTEREST GROUPS?

Despite the differences between the Strong and Kuder inventories, presently available data indicate that these inventories are measuring many common elements. The work of both Strong and Kuder presents evidence that interests can be grouped. The groups obtained by factor analysis of Strong's test have been listed previously.

Table 22 presents a logical reconciliation of the groups obtained by Strong and by Kuder. This synthesis is adapted from one proposed by Super. Although Strong's factor analysis did not yield all of the groups listed in the table, these groups are included because (1) Strong has suggested the existence of these groups upon the basis of new evidence obtained by him, and (2) Kuder has submitted data supporting their inclusion on a logical basis.

At the outset the reader should recognize that Table 22 does not present all possible groups of interests. Rather it presents only those interest groups which are revealed by a synthesis of the findings from scientific studies in which interests were measured. As research in this field continues, other groups of measurable interests will undoubtedly be identified. An example is the recent identification of outdoor interests by Kuder, who now includes these in his inventory. The possibility of identifying new groups of interests is emphasized by Strong in his discussion of his group scales.

Granted that other interest groups may be identified through further research, what is the significance of Table 22? It contains three lists of interest groups, one list proposed by Super.¹² Primarily these lists provide a frame of reference for considering interests, be they measured, observed, or claimed.

¹²Super, *op. cit.*, p. 381.

TABLE 22

LOGICAL SYNTHESIS OF MEN'S INTEREST GROUPS, AS OBTAINED BY STRONG AND KUDER,
AS PROPOSED BY SUPER, AND AS MODIFIED BY THE AUTHORS

Strong's Interest Groups	Kuder's Interest Groups	Super's Names for Interest Groups
Science (Group I, II)	Scientific	Scientific
People (Group V)	Social Service	Social-Welfare
Language (Group X)	Literary	Literary
Things vs. People (Group IV)	Mechanical	Material
Business Detail (Groups VII and VIII)	Clerical Computational	System
Business Contact (Group IX)	Persuasive	Contact
Musician (Group VI)	Artistic	Artistic
	Musical	Musical
	Outdoor	(Kuder's "Outdoor" group not avail- able when Super prepared his list.)

They also summarize our present knowledge of the basic types of measurable interests which people have.

From the information given in Table 22 it appears that interest groups for men may be generally defined as follows: There is, first, a *scientific* interest which in its highest form characterizes college-trained chemists, physicists, and other physical and biological scientists. There is some evidence that this general scientific interest should be divided into creative-scientific and technical-scientific interests. There is, second, an interest which is commonly referred to as *social-service*, or welfare interest. In general, ministers, social workers, teachers, and social agency workers seem to have this kind of "uplift"

interest. There is, third, a *literary* interest which is found among those people who are most successful and happiest in occupations involving the use and manipulation of words or graphic symbols. These people include lawyers, journalists, and advertising copy writers. There is, fourth, a *mechanical* interest. This interest is found among people engaged in skilled trades and other subprofessional activities. They work with things rather than people. In this connection, it should be noted that professional engineers frequently have a strong mechanical interest. Fifth, there is a *business detail* interest which characterizes persons engaged in the clerical, accounting, or control aspects of business. There is, sixth, a *business contact* interest which is high among salesmen and promotional workers. Because the business contact interest is so broad, Strong believes that eventually it can be divided into two or more basic types of interests. Finally, there are the *artistic*, *musical*, and *outdoor* interests. Although these are listed as separate interests, the evidence for their existence as such is not as clear-cut as is the evidence pertaining to the other six interest types previously mentioned.

There is a tendency for occupational interests to be more diffused and less specialized among women than among men. In general, however, women's interests can be grouped in types similar to those already described for men. Thus, women's interests are identifiable as the *scientific* type, the *business detail* and the *business contact* types, and the *social service* type. Differing from men, women have a nonprofessional type of interest which can best be described as "prior-to-marriage job interest." To a large extent, this type of interest is found in those vocations to which many women turn for two to five years before they marry; these vocations do not require extensive special training. Women also have a creative or aesthetic type of interest which differs in certain important aspects from that found among men. As the Strong blank for women is used in further research studies, a clearer picture of the interests of women will undoubtedly emerge.

WHAT ARE THE IMPORTANT FACTS ABOUT INTERESTS?

The many studies of interests and the experiences of many guidance workers who have extensively used interest measures

have revealed a number of important facts about interests. Although it is beyond the scope of this volume to review all of the literature dealing with interests, some of the most significant facts are presented in this section. The following brief statements are supported by evidence appearing in the references listed at the close of this chapter.

1. On the basis of experimentation and logic, it appears that a wide range of occupations can be classified into about nine clearly defined interest types.

2. These interest types seem to be fairly well established in an individual in the age range 16 to 25—that is, *before* he has had an opportunity to build up any extensive occupational experience.

3. While in this age range, some persons may not develop clearly defined interest patterns; other persons may never develop a type of interest which enables them to make a stable or satisfactory job adjustment.

4. Interests do not appear to have a close relationship to aptitudes. The correlation between a measured interest and a measured aptitude, both in the same field, is positive but relatively low. For example, a person may have a high musical interest but little musical aptitude.

5. The interest test scores of students are not good predictors of their achievement in school. Students who are interested in a subject tend to persist in the study of it. They are no more successful, however, than students of equal ability who express little or no interest in that same subject.

6. Interest tests cannot predict occupational *success* except in a few fields of work, notably salesmanship. It appears, however, that men with high interest test scores in their occupations tend to continue in these occupations longer than those who have low interest scores in their field of work.

7. Scores on an interest inventory do, within limits, predict the amount of *satisfaction* a person will obtain from certain kinds of schooling and certain kinds of occupations.

8. Many people by virtue of their abilities, backgrounds, and general interest make-up, can be satisfied in any one of a number of school courses and in any one of a number of jobs.

9. The best measurements of interests are those which

attempt to get the student to express choices among a wide range of *activities* to which he has been exposed rather than to express preferences for specific *occupations* about which he has only limited information.

HOW ARE INTEREST INVENTORIES USED?

The summary statements just given point directly to the major use of interest inventories—helping the individual to identify those areas of study or work which will be *personally satisfying*. Toward this goal, Brayfield has listed eight important uses of interest inventories:

More specifically, interest measures are a diagnostic aid in the following counseling problems:

1. Identification of unknown or unrecognized interests
2. Confirmation of claimed interests
3. Identification of potential or actual conflict between claimed and measured interests
4. Identification of discrepancy between interests and aptitudes or abilities
5. Identification of a potential or actual conflict between two or more distinctive interest types or groupings
6. Verification of the absence of differentiated interest patterns
7. Identification of problems associated with masculinity-femininity, interest maturity, or occupational level as non-occupational determinants of interest
8. Identification of educational or vocational maladjustment due to inappropriate interests¹⁸

In essence, the use of interest inventories in guidance work is a two-step process. In the first step, the guidance worker tries to determine the dominant interest type of each individual. In the second step, the worker relates the individual's interest type to his levels of ability, aptitude, and achievement. This step then helps to reveal the individual's possible vocational field or fields. These steps are clarified by the example given next.

Consider the boy whose dominant interests are in the "business detail" group. Here are some questions to ask about him:

¹⁸Arthur H. Brayfield, "The Use and Abuse of Interest Measurement," *California Guidance Newsletter*, IV, No. 4 (January, 1950), 3.

1. Does this boy have the ability, the special achievement in social science, and the financial backing required to complete successfully a college or university program in business administration? If so, he may become a junior executive and eventually a senior executive, or he may enter specialized work in accounting or a related field.

2. If this boy does not have the requisite levels of ability and achievement to succeed in college, does he have the levels necessary for success in a private commercial college or in a commercial course in his present high school? If so, what are his placement possibilities?

3. Can this boy develop the proficiency needed to work successfully in a large business organization where accuracy, speed, and competition prevail? Or can this boy develop a degree of proficiency better suited to successful work in a small manufacturing or business organization where the competition is not so keen?

In this example, the assumption is made that the counselor has given the boy an interest inventory and that the results classify him as to his interest type—that is, “business detail.” This classification helps to limit the occupational fields in which training and placement seem appropriate for him. Because of this limitation the counselor does not suggest that the boy consider being an engineer, a doctor, or a salesman. Next, his counselor tries to determine the ability level, within the occupational field of the boy’s interest, at which he can most effectively operate. This may range from a high theoretical level of training in business administration to a lower level of vocational training concerned mainly with business detail activities.

In discussing the uses of inventories and other means of interest determination, three points should be emphasized:

First, in the junior high school an interest inventory can be employed to obtain *general* indications of students’ interests. These indications can serve to help guide students into the already existing high-school programs, such as the academic or college preparatory, the commercial, and the industrial curriculums.

Second, in the senior high school an interest inventory can be used to aid in refining the identification of students’ interests

as determined earlier. In interpreting the findings from such an inventory, however, it should be kept in mind that occupational interests as thus measured do not seem to be highly related to school success in terms of grades either at the high-school or college level.

Third, an interest inventory can be given to a young adult to help him check upon his attitudes and satisfactions in his present job or field of work. If the inventory shows that this adult has no dominant interest in this job or field, he is likely to be dissatisfied and unhappy in his work.

WHAT INTEREST INVENTORIES ARE AVAILABLE?

The interest inventories described in the next section may appear expensive in comparison with certain other psychological tests. Yet, it must be remembered, such inventories yield many specific and useful scores. Moreover, even though it is initially inexpensive to ask the student what he wants to be when he grows up, this may prove to be a costly procedure for that student. The student's curriculum, for instance, may be planned on the basis of his claimed choices, a procedure that may prove to be extremely time-consuming and otherwise wasteful.

In selecting inventories for description in this chapter, the authors have omitted some inventories which appear to be potentially useful but which have been published so recently that little research evidence of their worth is available. New inventories such as the *Kuder Preference Record—Personal* may in time be quite useful, but are not included because the authors have not had experience using them. Furthermore, the authors were unable to find sufficient evidence regarding the usefulness of these inventories in professional literature.

Certain other inventories are not described although some evidence was available that they could be useful in counseling. These inventories were omitted, not only because of limitations of space, but also because their authors have not followed through on their tests by providing the data which competent test-users normally want and expect. Among the many interest inventories, of course, there are a few which fit the description given by Dulsky in *The Third Mental Measurements Year-*

book: "Any resemblance between this scale and a scientific instrument is purely coincidental. Saying any more about this scale would constitute a gross waste of space."¹⁴

Interest Questionnaire for High School Students (1942 Edition)

In this questionnaire there are 234 items regarding occupations, activities, school subjects, prominent men, and the like. To each item the student responds by indicating "like," "indifferent," or "dislike." The questionnaire yields scores which are indicative of interest in the following courses of study: academic, technical, and commercial. Standardized upon ninth-grade boys. Its suitability for use with other students is unstated.

Reliability: The corrected odd-even coefficient for 75 pupils, 25 in each of the three curricula, was .95 for the technical key, .93 for the commercial key, and .86 for the academic key.

Validity: Being enrolled in the curriculum served as the criterion for validating each of the three keys. In one of the studies reported in the manual, the biserial validity coefficients were as follows: between being in the academic curriculum and in other curricula, .560; between being in the commercial curriculum and in other curricula, .727; and between being in the technical curriculum and in other curricula, .868.

Norms: Questionnaire is designed so that a score of zero on any of the keys indicates "neutral" interest in the given curriculum; a positive score, definite preference; a negative score, a negative interest or dislike for the curriculum. The manual advises: "In general the relative interest that a pupil shows in the work of the three curricula can be determined by comparing the scores. The highest of the three scores may be taken as an indication of his strongest interest." A student's scores can be compared with those of 800 ninth-grade boys by consulting a table of decile ranks provided in the manual.

Authors: O. K. Garretson and P. M. Symonds.

Publisher: Bureau of Publications,
Teachers College, Columbia University,
New York, New York.

¹⁴Stanley G. Dulsky, a review in *The Third Mental Measurements Yearbook*, ed. by Oscar K. Buros (New Brunswick: Rutgers University Press), p. 644.

Kuder Preference Record—Vocational

The purpose of this inventory is to determine the individual's relative preference for activities in the ten following areas: outdoor, mechanical, computational, scientific, persuasive, artistic, literary, musical, social service, and clerical. Separate scores are yielded for each of these areas, in addition to a "verification score." The latter is designed to detect individuals who did not follow directions or carelessly marked responses.

Reliability: Coefficients of reliability for each of the 10 scores for groups of 100 each (men, women, boys, and girls) are reported in the manual. All coefficients are in the range .84 to .93, with a median of .88.

Validity: In one sense, the extent to which the various scales are independent of each other is an indication of validity since the inventory is a measure of degree of preference for different kinds of activities. The manual reports that the correlations among the various scales are below +.30, with these exceptions: Computational and clerical are positively associated (.53). Persuasive is negatively associated with outdoor (— .49), mechanical (— .32), and science (— .42). Mechanical is negatively associated with science (— .39) and literature (— .39). Science and musical correlate negatively (— .38). The manual also reports profiles for a large variety of occupational groups. In general, the profiles are in accord with logical expectations; e.g., the score for lawyers is high on the literary key, and the score for chemical engineers is high on the science key.

Norms: Percentile ranks on adults and high-school students.

Author: G. Frederic Kuder.

Publisher: Science Research Associates,
57 West Grand Avenue,
Chicago 10, Illinois.

Occupational Interest Inventory

This inventory yields scores for six fields of interest. They are: Personal-Social, Natural, Mechanical, Business, Arts, and Science. Three type-of-interest scores are also obtained; namely, verbal, manipulative, and computational activities. A level-of-

interests score is also available. Intermediate form for junior high school, advanced form for senior high school, college, and adult level.

Reliability. Test-retest (after four week interval) reliability coefficients based on 100 twelfth grade students range from .71 to .93 with a median of approximately .88.

Validity. No validity coefficients or occupational profiles are reported by the authors. They state that the following factors influenced the construction of the inventory and contribute to its validity: selection, design, balance, and presentation of items.

Norms. Percentile ranks based on males, females, and males and females combined.

Authors. Edwin A. Lee and Louis P. Thorpe

Publisher. California Test Bureau,

5916 Hollywood Avenue,
Los Angeles 28, California.

Occupational Interest Blank for Men—Revised.

Scores on the occupational scales indicate how closely the individual's interests correspond with those of men successfully engaged in given occupations. At this writing there are 39 occupational scales; additional ones are under development. Six occupational group keys and three non-occupational keys (Masculinity, Femininity, "Occupational Level," and "Interest Maturity," are available. The questionnaire contains 400 items dealing with a wide variety of activities. Use with boys younger than 17 years is questionable except in the case of the more able or more mature students.

Reliability. Numerous studies dealing with the reliability of one or more scales have been reported. They indicate that scale reliabilities obtained by odd-even techniques, average about .88 when college students are tested. Reliability coefficients decreased markedly when tenth grade students were tested.

Validity. As pointed out in this chapter, determining the validity of an interest inventory is a very complex problem because of the multiplicity of criteria. For a comprehensive bibliography concerning the validity of this test, the reader

should consult *The Third Mental Measurements Yearbook*.¹⁰ The manner in which the scales are constructed makes them valid indicators of the degree of similarity between the student's interests and those of men successful in the occupation. But since this fact in itself does not enable one to predict, other evidence of the validity of the scores for a prediction is continually sought. Present data indicate, for example, that high scores in a particular occupation are related to persistence in preparation for the occupation. With the exception of the "sales" key, scores do not appear to predict success in training for or in the occupation. Consult references at the end of this chapter for additional comments on validity.

Norms: The author provides a variety of norms including standard scores and letter grades based on criterion groups, percentiles based on freshmen and senior students at Stanford University. The most useful of these norms are the letter grades. A grade of *A* indicates, for example, interests similar to the top 69 percent of the criterion group. *B*+, *B*, and so on indicate relatively less similarity of interests. *C* is the lowest grade.

Author: E. K. Strong.

Publisher: Stanford University Press
Stanford, California.

Vocational Interest Blank for Women - Form W

This inventory is a counterpart of Strong's *Vocational Interest Blank for Men*. It can be scored for 25 occupations and "masculinity-femininity." This form, issued in 1947, is a revision of an earlier blank for women. No further annotation is made here because the basic design is the same as that of the blank for men.

SUGGESTED READINGS

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¹⁰*The Third Mental Measurements Yearbook*, edited by Oscar K. Buros (New Brunswick: Rutgers University Press, pp. 646-648).

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Appraising Personal Adjustment

WHY do people behave as they do? For years scientists and philosophers have been seeking an answer to this important question. They have accumulated, bit by bit, evidence which reveals a meaningful and illuminating answer. Even so, scientists cannot yet predict accurately all the behavior of men.

There are useful techniques and tests for behavior study which have been discussed in previous chapters. Some of these techniques make it possible to predict certain kinds of behavior with a fair degree of accuracy. Scholastic ability test scores, for example, are reasonably good indicators of probable success or failure in certain kinds of scholastic activities. But such scores are not always accurate predictors of academic success, because success depends not only upon what is measured by the test but also upon personality factors. Their influence on scholastic success was briefly mentioned in Chapter 12, in its discussion of the overachiever and the underachiever.

Although it is difficult to measure personality factors scientifically, in our daily life we continue to pass judgment on the personalities of our associates and our students. For this purpose a large common vocabulary exists. "Persevering," "bashful," "submissive," "lazy," "shy," and "quick-tempered"—these are a few of the hundreds of words which we apply in describing the traits of people.

In testing personality and in predicting from personality tests, we still do not know how much of a given personality trait or what combination of personality traits makes for successful school achievement or successful job adjustment. One reason for this, as suggested earlier, is that people vary in their

definitions of a given trait and in their opinions of what behavior indicates that trait. Two people, for example, may use the same trait word, such as "lazy," "persevering," or "well-adjusted," but they will not always agree on the types of behavior which the word describes. Another reason for this inability to relate personality traits to success in school or outside is the difficulty in agreeing upon standards of "good" or "bad" performance for the scores made on personality tests.

In spite of the difficulties of definition, teachers and counselors cannot escape the necessity of doing as good a job as possible in studying the personalities of their students with tests and other techniques. Studies in industry, for instance, have indicated that a substantial majority of workers who leave jobs or who are discharged from jobs are deficient chiefly in human relations skills or in personality adjustment. Teachers are familiar with the type of difficult or maladjusted child whose abilities and achievements may be adequate to the academic tasks at hand but who fails to adjust satisfactorily in the school situation.

Personality traits warrant careful study not only because they are important in day-to-day behavior, but also because they are related to interests. In the previous chapter, the major interest types were described. The research studies which revealed interest types showed also that people who had particular types of interests tended to have personality patterns related to these interests. For example, students whose dominant interest type was in welfare or uplift activities were liberal in economic outlook, gregarious, and socially sure-footed in a wide range of individual social skills. Students whose dominant interest type was in business contact fields were equally gregarious and sure-footed in social skills but were markedly conservative in economic outlook; also, they were less motivated by a concern for the welfare of others. Students whose primary interest type was in business detail activities were far less gregarious and socially skillful than either of the two groups mentioned here. In economic outlook they were about as conservative as were the business contact workers.

Such evidence indicates that occupational adjustment is based not only upon mental ability and special achievement

but also upon occupational interest and, to a certain extent, upon personality traits. These interests and personality traits can be estimated or measured with a certain amount of accuracy.

WHY SHOULD GUIDANCE BE CONCERNED WITH PERSONALITY?

Guidance workers have two major reasons for studying the personality of students. First, they must make some attempt to determine the appropriateness of a student's personality make-up for the occupational field which he may be planning to enter. Second, they must try to identify the maladjusted student. His maladjustment may be due not to lack of aptitude but rather to other factors which are preventing him from using his aptitude effectively. Among such factors are the personality traits exhibited in excessive daydreaming, temper tantrums, excessive shyness, bullying or other overaggressive behavior, and attention-getting devices including those used to seek sympathy.

In studying personality, the counselor should be mindful of the fact that specialists in this field do not yet know precisely the nature or development of what might be called "social adjustment," for example. They are not sure of where social adjustment begins or of how rapidly it grows. They do not know exactly when this type of adjustment reaches its maximum. And what is true of social adjustment is equally true of other kinds of personality adjustment.

In regard to family adjustments, specialists are fairly well agreed that there is a general tendency for children sometime between the ages of 15 and 20 to begin establishing their independence of mother and father. Unless adults handle their child wisely during this period of years, the child may remain over-dependent on his parents or may react against them to the point of an open conflict. But again, the specialists do not know the exact chronological age when a child begins to develop such independence or when he finally achieves the independence which is a characteristic of maturity.

Though knowledge of personality development is limited, it seems to be true that, toward the end of adolescence, individuals arrive at a relatively stable level of social adjustment, emotional adjustment, maturity, or independence. With minor

variations around this level of behavior, they act from then on in a more or less predictable fashion. These minor variations may be an outcome of deliberate training or they may be a result of unguided changes in the individual's environment.

The very shy student, for example, may overcome some of his shyness through a concerted effort on the part of a counselor. In this effort, the counselor teaches the student social skills and techniques of getting along with people. This shy student may move to another school where he develops improved social adjustments almost on his own. In either case, however, it is improbable that this shy student will ever become "the life of the party" or will ever become interested enough in people to develop into a high-pressure salesman or promotional worker.

HOW CAN THE GUIDANCE WORKER EVALUATE PERSONALITY?

Generally speaking, there are four methods of measuring or estimating personality characteristics and personality adjustments. These methods are:

1. Observation in which the findings are recorded by means of anecdotal records or rating scales
2. Fact-finding interviews in which the teacher, counselor, psychiatrist, social worker, or clinical psychologist, each according to the type and level of his skills, uses the interview as a tool to probe the personal adjustments and characteristics of an individual
3. Questionnaire-type or paper-and-pencil tests of personality in which the individual records his responses about himself
4. Projective-type personality measures (explained later) in which the individual projects or shows his personality through his responses in a more or less unstructured test situation

The first two of these methods have been discussed in considerable detail in earlier chapters. Therefore, they will receive no extensive elaboration here. With reference to the second technique, intensive interviewing is impractical as a method of studying all students because of the time required and because special training of a high order is necessary. Such training is

essential if the interviewer is to develop the skill required for dealing with all kinds of students and with all aspects of their personal make-up. For these two main reasons, fact-finding interviewing usually is a supplement to other methods of studying students' personalities.

Observations which are recorded as anecdotes are probably the best beginning and continuing technique for assessing the personality development of students. Observations recorded as periodic ratings of students by teachers and counselors have some value; they are certainly better than no records at all.

After a school has developed and instituted a well-organized plan for observing students, and anecdotes and ratings are flowing regularly into students' cumulative folders, this school may find that personality tests are a useful addition to its program for assessing personality characteristics. After staff members have reached some agreement upon definitions of personality traits and the significance of observed behavior, they may wisely introduce personality tests.

Whether observational methods are supplemented by test methods or not, school personnel should be fully aware of the difficulties involved in attempting to define a personality characteristic. What do we mean when we say, for example, that a student is "not very industrious"? Do we mean that he is "just plain lazy" or that he is "not as industrious as some students we have known"? Do we mean that the student is not industrious in general, varying in this trait from situation to situation? To take another example, what do we mean when we say a student is "honest"? In thus describing him, are we aware of the fact that his honesty may not be consistent in all circumstances—he may never steal money or school property, but he may cheat on a final examination. As these examples show, it is extremely difficult to define personal traits. It is even more difficult to make sure that the defined trait describes a student's behavior under varying circumstances.

Difficulties in identifying personality traits beset not only school people but also those who prepare questionnaire or paper-and-pencil personality tests. Each test-maker tries to overcome these difficulties in his own way. Among tests there is some correspondence in the names given by the test-makers

to the traits measured, but the differences behind the test scores are often great. For this reason, the so-called "atomistic" tests which measure specific traits have been severely criticized, particularly by those who prefer the so-called "global" approach to personality analysis.

What then is the main difference between the global and atomistic approaches? Traxler says: "In the first class of instruments of appraisal, personality as a whole is studied qualitatively and intensively by means of projective techniques, while in the latter class an attempt is made to analyze personality into its component parts."¹

WHAT ARE PROJECTIVE-TYPE TESTS?

The basic idea of projective tests is that a person reveals his personality make-up by the manner in which he responds to stimuli which permit relatively free responses on his part. Thus we can get some notion of make-up by presenting such stimuli as ink blots, vague pictures, and incomplete sentences. The presentation has relatively little structure; responses to these stimuli are not dependent upon a limited cultural pattern. For these reasons, the individual in responding to the stimuli tends to project his way of seeing life, his meanings, and his feelings.

The values of projective techniques are described by Frank in these words:

Thus we elicit a projection of the individual personality's *private world* because he has to organize the field (stimuli), interpret the material, and react affectively to it. More specifically, a projective method for study of personality involves the presentation of a stimulus situation designed or chosen because it will mean to the subject, not what the experimenter has arbitrarily decided it should mean . . . but rather whatever it must mean to the personality who gives it, or imposes upon it, his private, idiosyncratic meaning and organization. The subject then will respond to his meaning of the presented stimulus-situation by some form of action and feeling that is expressive of his personality. . . . The important and deter-

¹Arthur E. Traxler, *Techniques of Guidance* (New York: Harper and Brothers, 1948), p. 100.

mining process is the subject's personality which operates upon the stimulus-situation as if it had a wholly private significance for him alone.²

It is clear from this quotation that the individual's projections upon the stimuli are of primary importance, and the stimuli themselves are of secondary importance. Even so, a great deal of attention has rightly been given to the kinds of materials or situations which are used to evoke projection. In recent years literally hundreds of stimuli have been used—ink blots, drawing tasks, play situations, dramatic episodes, recordings of voices or music, pictures, and handwriting. Although the stimuli are varied, the projective tests including these stimuli can be grouped according to four main types: (1) visual stimuli, (2) verbal associations, (3) play and drama, and (4) expressive movements. To illustrate the nature of each of these types, one or two tests therein will be described briefly. These descriptions also should further clarify some of the basic assumptions of the projective tests as a whole.

Visual Stimuli Projective Tests

The most widely-used projective test of the visual stimuli type is the *Rorschach*. It is named for its originator, a Swiss psychiatrist. In 1921, he published an account of ten years of experimental work with ink blots. The present test consists of ten cards, each of which contains an ink blot; five are printed in black and white and five have color.

The administrator presents the ten cards in a given order to the subject. As he presents each card, he instructs the person to tell what he can see in it. The administrator then presents all the cards a second time, in order to ascertain more fully what the person sees and where in the ink blots he sees it. The administrator may present the cards a third time to define factors which need to be explored more fully.

Throughout the Rorschach examination the administrator makes a detailed record, verbatim if possible, of the subject's responses. After the test, he analyzes this record or protocol, as

²Lawrence K. Frank, "Projective Methods for the Study of Personality," *The Journal of Psychology*, VIII (October, 1939), 402-404.

it is called. To increase the objectivity of this analysis, Beck,³ Klopfer,⁴ and others have proposed methods of scoring responses by categorizing their nature and content under several headings. Some psychologists, however, caution against overdependence upon such scoring systems on the grounds that a more meaningful analysis can be obtained by considering the subject's responses as a whole.

Whatever method is employed to score or interpret a Rorschach protocol, the process is a long and complicated task. To perform this task competently, the administrator must have had a great deal of training and experience.

The reliability and validity of responses to the Rorschach test have been studied by numerous investigators. They report a wide range of reliability coefficients, most of which range between $+ .50$ and $+ .60$. These researchers also report varied findings as to the validity of the Rorschach test. In attempting to establish the validity of the Rorschach, they have been hampered by the lack of adequate criteria. This inadequacy is to be expected when one remembers that the test purportedly measures subtle and ephemeral aspects of personality. Despite these statistical shortcomings, the test does appear to be able to distinguish with reasonable accuracy between "mentally ill" and "mentally well" persons.

Another widely-used projective device of the visual stimuli type is the *Thematic Apperception Test*, commonly referred to as the T.A.T. This test was developed by C. D. Morgan and H. A. Murray of the Harvard Psychological Clinic. It contains 20 pictures which portray ambiguous situations—that is, the pictures themselves do not tell clear-cut stories. The first picture, for example, shows a young boy looking at a violin on the table before him. The person being tested is asked to make up a story around each of the pictures, that is, to tell what situation the picture portrays, the events that preceded it, those that will follow, and the feelings and thoughts of the character or characters depicted.

³Samuel J. Beck and Willard L. Valentine, *Rorschach's Test I: Basic Processes* (New York: Greene and Stratton, 1944).

⁴Bruno Klopfer and D. M. Kelley, *The Rorschach Technique* (Yonkers: World Book Company, 1942).

According to Bell, the T.A.T. "is based on the theory that in the construction of stories around ambiguous picture stimuli the individual organizes material from his own personal experience, partly the immediate perception of the stimuli and partly the associations to those perceptions of the stimuli and partly the associations to those perceptions selected from conscious and pre-conscious imagery. In achieving these fantasies the conscious and unconscious impulses, the defenses and the conflicts of the individual are expressed, permitting the skilled interpreter to discover the content of such characteristics of the personality and to make certain assumptions about the development and the structure of the personality."⁵

The stories which the person tells are recorded verbatim and later are carefully analyzed for elements which throw light upon his personality make-up. No one method of analysis is accepted by all psychologists who use this test. Murray examines each story to see who the *hero* is, on the assumption that the person tested identifies himself with the hero. From the story, Murray next tries to determine the *needs* of the hero, because they throw light on the needs of the person tested. Murray continues his analysis by ascertaining the *press* or forces which may benefit or harm the hero, assuming that the person tested is being pressed by similar forces. Finally, Murray studies the *thema* or plot and the *outcome* of the story for the light they may throw on the personality of the person tested.⁶

Although the analytic methods used by Murray differ from those employed by other psychologists, all these methods have one essential in common. They seek to answer the question: In what ways has the person revealed his personality in the stories he tells about the pictures presented?

Like the Rorschach test, the T.A.T. poses difficult problems for those who wish to establish its reliability and validity. A few studies indicate that the T.A.T. evokes fairly reliable responses. When the same picture is shown twice to a person, he may tell one story on the first presentation and a somewhat different

⁵John E. Bell, *Projective Techniques* (New York: Longmans, Green, and Company, 1948), p. 207.

⁶Henry A. Murray, *Thematic Apperception Test Manual* (Cambridge, Mass.: Harvard University Press, 1943), p. 20 (pamphlet).

story on the second presentation. Yet in both stories he tends to reveal similar *themas* and problems. A few studies also indicate that the test has a certain degree of validity—that is, findings from it are congruent with other facts about the person tested. On the basis of the T.A.T. alone, Harrison, for example, was able correctly to identify the major clinical category of 30 out of 39 patients.⁷ Comparable validity data have been obtained by other investigators.

Nevertheless, according to Bell, psychologists have made “only a beginning in establishing the validity and reliability of the T.A.T.”⁸ The present usefulness of the T.A.T. is still well-defined by Murray’s statement made in 1938: “The conclusions that are reached by an analysis of T.A.T. stories must be regarded as good ‘leads’ or working hypotheses to be verified by other methods rather than as proved facts.”⁹

Verbal Association Projective Tests

Another type of projective device consists of *word association* and *incomplete sentence* tests. Such tests have a long history. Galton and Wundt, for example, were using the association test in their psychological laboratories approximately 75 years ago.

Although today there are many varieties of this type of test, their general nature can be seen by an examination of the simple word association method described by Rapaport and Schafer.¹⁰ According to this method, the examiner tells the person being tested that he will be given a word and that he is to respond with the first word that comes to his mind. The person responds to a list of 60 words, compiled by Orbison. Orbison selected this particular list “because of its brevity and composition. It includes words of familial, home, oral, anal, aggressive,

⁷Ross Harrison, “The Thematic Apperception and Rorschach Methods of Personality Investigation in Clinical Practice,” *Journal of Psychology*, XV (January, 1943), 49-74.

⁸Bell, *op. cit.*, p. 226.

⁹Henry A. Murray and others, *Explorations in Personality: A Clinical and Experimental Study of Fifty Men of College Age* (New York: Oxford University Press, 1938), p. 14.

¹⁰David Rapaport and Roy Schafer, *Manual of Diagnostic Psychological Testing, II: Diagnostic Testing of Personality and Ideational Content* (New York: Josiah Macy, Jr. Foundation, 1946), p. 7-25.

and sexual connotations—i.e., of a variety of areas of potential conflict. This list consists mostly of nouns and provides the examiner with the frame of reference, 'associative reaction to nouns.'"¹¹

As the examiner presents each word to the subject, he records the time which elapses between the word's presentation and the subject's response. If the stimulus word touches a "conflict area," the subject is likely to take longer to respond than if that word is "neutral" to him. The examiner also, of course, records the subject's response to each given word.

The stimulus-word may elicit a reaction-word that reveals the "content" of the subject's conflict. A subject who, for example, responds "hate" to the stimulus-word "father" may reveal something about his feelings toward his father. The common responses to "father" are "mother," "parent," or "son." Although some responses may not cast light on the nature of the conflict, they may serve an important diagnostic function. The bizarre response, failure to make any response, a long and involved definition of the stimulus-word, each may alert the examiner to the possibility of emotional disturbance.

There is some evidence regarding the reliability of the word association test. Rapaport and Schafer repeated the test and instructed their subjects "to respond with the very same words you did before." They found that 80 percent of the response-words on the second test were the same as the response-words on the first test.¹² Tendler, among other investigators, found the test fairly reliable.¹³

The validity of the word association test, however, has not yet been established. Most studies of the validity of the test have dealt with the nature of the responses to the various words included on the stimulus list. A few studies have correlated the responses on word association tests and emotional reactions as inferred from physiological reactions. Nearly all the correlations have been very low. Other studies of validity have concentrated upon the differences between groups of "normal"

¹¹*Ibid.*, pp. 7-8.

¹²*Ibid.*, p. 12.

¹³A. D. Tendler, "Significant Features of Disturbance in Free Association," *Journal of Psychology*, XX (1945), 65-89.

and "abnormal" persons in their responses to word association tests.

Summing up the value of word association tests, Bell refers to the work of Rapaport and Schafer and points out that their most important contribution "is the provision of an hypothetical rationale for its method and interpretation. While the hypotheses are still tentative, they hold out the hope that the revival of interest in the test will realize 'the potential fertility of the method.'"¹⁴

Play and Drama Projective Techniques

Play and drama techniques have a common base in that both provide the subject with an opportunity to act out his feelings. Their diagnostic value is dependent upon the observer's skill in noting and in interpreting the more significant of the subject's actions, including any remarks he may make during the play or dramatic activities. Hence, techniques for improved observation which were discussed in Chapter 4 have a direct application here.

The leading exponent of the technique known as psychodrama is J. L. Moreno, a psychiatrist, who started his work in Vienna in the 1920's. Since then, in New York, he has established an extensive center which includes his own spontaneity theatre, publishing house, and hospital. His procedure has been described in many of his publications. Essentially it provides for a *director* (or therapist), who guides the spontaneous and informal dramatic production. The subject (or patient) is the principal actor. Either the director or the subject suggests particular scenes that dramatize situations apparently causing emotional conflict in the subject's life. They are usually assisted by other persons who assume various roles. One such person, for example, may serve as the subject's *auxiliary ego* who reflects the subject's actions to him.

The psychodrama is primarily a therapeutic situation in which the subject, by playing a role in a spontaneous dramatic setting, has opportunity to express his feelings, to gain new insights into his behavior, and to become desensitized to certain

¹⁴Bell, *op. cit.*, p. 35.

emotionally-charged situations. In addition, the psychodrama does provide some diagnostic cues. For example, Moreno has described nine test situations which he believes reveal much concerning the individual's personality structure and cultural level.¹⁵

There are no satisfactory studies of the reliability and validity of psychodrama. The method employs observational techniques that have not been standardized or validated. It, moreover, is expensive in terms of the personnel time and the physical equipment required.

Play therapy has been studied carefully in numerous settings. While the diagnostic aspects cannot be entirely separated from the therapeutic aspects, the technique does appear to have value for personality appraisal—particularly of young children. Axline, in her comprehensive treatment of the technique, points out that "play therapy is based upon the fact that play is the child's natural medium of self-expression. It is an opportunity which is given to the child to 'play out' his feelings and problems just as in certain types of adult therapy, an individual 'talks out' his difficulties."¹⁶ As in psychodrama, the diagnostic value of play therapy depends upon the therapist's skill in observing the subject's actions and in interpreting their significance.

Expressive Movement Projective Methods

People have long recognized that each individual has characteristic mannerisms, gestures, and facial expressions which distinguish him from others. In addition, people have developed in their own minds certain personality stereotypes through which they classify the real or presumed characteristics of others. These stereotypes are illustrated by such expressions as the sweet old lady who has a *kind face*, the nervous child who *bites his fingernails*, or the impetuous man who always walks at a *rapid gait*. Artists often employ these stereotypes to portray the alleged attributes of their subjects. An actor on the stage uses

¹⁵F. B. Moreno and J. L. Moreno, "Role Tests and Role Diagrams of Children," *Sociometry*, VIII (1945), 428-441.

¹⁶Virginia M. Axline, *Play Therapy* (Boston: Houghton Mifflin Company, 1947), p. 9.

mannerisms, gestures, and other expressive movements to represent the personality of the role he is playing. Although these are only a few of many examples of our tendency to judge individuals on the basis of their expressive movements, there is little evidence regarding the validity of such judgments.

The assumption underlying research in this area is that an individual's expressive movements reflect his mental and emotional make-up. After extensive investigation, Allport and Vernon concluded that this assumption was justified. "It is surely not unreasonable to assume that insofar as personality is organized, expressive movement is harmonious and self-consistent, and insofar as personality is unintegrated, expressive movement is self-contradictory."¹⁷

Many scientific investigations have dealt with the relationship of personality characteristics to expressive movements as evidenced in photographs, movies, handwriting, copying geometric figures, free-hand drawing, finger painting, and the like. In general, these studies show that interpretations of expressive movements lack objectivity and consistency. It should be noted, however, that certain kinds of expressive movements can be objectively measured. Until satisfactory objective measures are developed and until results from them are found to be significantly related to personality characteristics, guidance workers should use other means for appraising personality.

Limitations of Projective Techniques in Guidance Work

The four major types of projective techniques, which have just been discussed, are all based on a global approach to personality—i.e., they are designed either to study aspects of the personality as it functions as a whole or to study the individual's total personality. While the projective techniques representing the global approach have many values, there is need for more evidence that such techniques do, in fact, present a picture of the total personality which is reliable or which has predictive value for later behavior.

¹⁷G. W. Allport and P. E. Vernon, *Studies in Expressive Movement* (New York: Macmillan Company, 1933), p. 182.

From the point of view of guidance workers, projective techniques have limited usefulness. Such techniques require specially-trained personnel. They make heavy demands on staff time for their administration and interpretation. Even if trained personnel and adequate time are available, these techniques do not yield data of immediate and proven worth in the guidance process of studying students.

Although projective methods hold promise for the study of personality, their validity is either undetermined or so low that they should be used mainly if not solely to supplement other techniques. Moreover, until guidance workers have acquired the necessary clinical training and experience to master projective techniques, these techniques should be employed only by clinical psychologists, psychiatrists, and other qualified psycho-diagnosticians.

WHAT ARE QUESTIONNAIRE-TYPE PERSONALITY TESTS?

Attention may now be given to personality tests which have been characterized as atomistic in approach. Such tests attempt to identify specific problems or areas of maladjustment. Although these tests differ from each other in detail, they all follow a general pattern. A typical test contains a series of statements or questions, such as, "I feel blue most of the time," "People are always looking at me," or "I worry about sex." The person taking the test indicates whether or not each statement describes or expresses his own thoughts or feelings.

After the person has marked his responses to the statements in the test, these responses are summarized in some manner which yields one or more scores or ratings. Usually these scores are in terms of: (1) various psychological traits such as "confidence" or "self-sufficiency"; (2) areas of adjustment such as "home" or "health"; or (3) psychiatric categories such as "hypomania," "schizophrenia," or "hysteroid." Usually, in administering such a test, the subject is encouraged to respond to every item and is given sufficient time to do so.

Comparative Weaknesses and Strengths of Personality Tests

Although personality inventories have been widely used, Kornhauser in 1945 concluded, from a survey of 67 well-known psychologists, that these tests were held in low repute.¹⁸ Ellis, in 1946, reviewed the studies which had been reported in the literature in this field and concluded that "group-administered paper-and-pencil personality questionnaires are of dubious value in distinguishing between groups of adjusted and maladjusted individuals, and that they are of much less value in the diagnosis of individual adjustment or personality traits."¹⁹ Subsequently, however, Super pointed out that "Ellis' approach to personality inventories was hypercritical."²⁰

Some people criticize a paper-and-pencil personality test on the ground that the student can falsify his responses. If this is true, it becomes a good reason for questioning the advisability of giving a personality test to all students. In this connection, it should be pointed out, the interview situation is subject to the same kind of defect, because the student may give false, misleading, or uninformative responses.

Nevertheless, the paper-and-pencil test will yield surprisingly useful results if the following conditions exist: First, the teacher or counselor has established good relations with his students. And second, these students are actually seeking the help of their teacher or counselor. One of the basic principles of counseling, as stated earlier, is that the counselor can proceed successfully only if he has good relations with students. If he has such rapport, the chances are that he can make effective use of paper-and-pencil tests.

As pointed out at the beginning of this section, the typical personality test includes a number of statements or questions which students read and mark. After they have done so, the counselor will find it valuable to study the completed tests of certain students. He may discover that a given student has

¹⁸A. Kornhauser, "Replies of Psychologists to a Short Questionnaire on Mental Test Developments: Personality Inventories and the Rorschach Test," *Educational and Psychological Measurement*, V (1945), 3-15.

¹⁹Albert Ellis, "The Validity of Personality Questionnaires," *Psychological Bulletin*, XLIII (September 1946), 426.

²⁰Donald Super, *Appraising Vocational Fitness by Means of Psychological Tests* (New York: Harper and Brothers, 1949), p. 503.

responded unfavorably to particular items. He can then use these items as a basis for further questioning to bring out in greater detail the nature of the student's personality problem or problems.

The score on a personality test usually indicates by its deviation above or below the average that a maladjustment or general area of maladjustment exists in some degree. This score may not tell *what* the maladjustment is or *why* it developed. Suppose that a student has an unsatisfactory score on a test designed to measure *family adjustment*. The counselor cannot tell, except by further questioning, whether the indicated maladjustment involves relationships between the student and a parent, between both parents with a resulting effect on the student, or between the student and brothers or sisters; nor can he tell, by the score alone, the cause of the student's maladjustment.

Sometimes the counselor who finds an unfavorable score on a personality test cannot find any evidence of this maladjustment when he talks with the student tested. Therefore, he is inclined to say that the personality test score is in error or that the personality test is worthless. Situations of this kind, of course, clearly reveal the discrepancies between two types of personality judgments—that based on a test and stated in terms of a score and that based on observational findings and stated in the form of descriptive words, phrases, or sentences.

It does not necessarily follow that either the personality test score or the interviewer's description is always accurate or complete. The student may tell the truth in the interview, but not in the test, or vice versa. The test may be measuring one aspect of the student's personality whereas the interviewer's questions may be touching on another aspect of his personality. Or the interviewer may not have been skillful enough in asking questions to elicit the type of responses necessary to verify the test score.

At times a counselor falls into the error of regarding his own judgments as *always* superior to indications from test scores. This counselor overlooks the fact that expert test-makers have devoted considerable thought and time to the construction and standardization of their tests. That is why every counselor should think twice before rejecting test evidence. In fact, if

his judgments are based upon careless interviews or very short talks with students, his judgments may be inferior to those made on the basis of test scores.

WHAT PERSONALITY TESTS ARE AVAILABLE?

In the following pages, four personality inventories are briefly described. The *Minnesota Multiphasic Inventory* was selected for description not only because it has been useful for certain guidance purposes, but also because it has been the subject of more research than any other test of its type. This research points out that the test has great potential value in guidance situations as well as in the psychological clinic.

Two problem check lists, *The Mooney Problem Check List* and the *SRA Youth Inventory*, are described because they have demonstrated their usefulness for guidance workers. They have value both as group surveys and as a means of providing clues for better understanding of an individual's personality.

Finally, the *Adjustment Inventory* was included because it has been available for several years and has stood up well in actual use by trained counselors.

None of these tests should be introduced too early in a school's testing program. At first, they should be used only for individual testing of a few students with whom the counselor has established friendly relations. Later on, they may be more widely used among the student group.

The Minnesota Multiphasic Personality Inventory

This inventory contains 550 items. The individual indicates whether each item is descriptive of himself by responding to the categories "true," "false," or "cannot say." One form of the test has each item on a separate card; the individual sorts out the cards in the three piles corresponding to the response categories. In the other form, items are printed in a booklet and the responses are marked as in other paper-and-pencil tests. The items are subsumed under 26 topics ranging from general health through sex, family, occupation, and phobias.

When originally published, the test could be scored for nine scales: hypochondriasis, depression, hysterical, psychopathic deviate, masculinity and femininity, paranoia, psychasthenia, schizophrenia, and hypomania. In addition four other scores

give some indication of the meaning of the aforementioned nine scores. The extensive research reported recently in psychological journals indicates that the authors will undoubtedly make additional keys available when they publish the revised manual. The test may be used with persons 16 years or older.

Reliability: The authors have reported that test-retest reliability coefficients range from .71 to .83.

Validity: The separate scales appear to yield scores which bear a significant relationship to psychiatric diagnosis.

Norms: Percentile norms are available for each of the scores.

Authors: Starke R. Hathaway and J. Charnley McKinley.

Publisher: The Psychological Corporation,

522 Fifth Avenue,

New York 18, New York.

The Mooney Problem Check List

This inventory has a specially designed form for each of these four levels: (1) junior high school, (2) high school, (3) college, and (4) adult. The college and high school forms each contain 330 items, with 30 items in each of the following areas: (1) Health and Physical Development, (2) Finances, Living Conditions, and Employment, (3) Social and Recreational Activities, (4) Social-Psychological Relations, (5) Personal-Psychological Relations, (6) Courtship, Sex, and Marriage, (7) Home and Family, (8) Morals and Religion, (9) Adjustment to School Work, (10) The Future: Vocational and Educational, and (11) Curriculum and Teaching Procedures. The junior high school form contains 210 items distributed among seven areas. Each check list provides space for the individual to describe additional problems, to comment on those he marked, or to add other information. The inventory is not scored; however, the authors do suggest counting the number of items which are marked in each area.

Reliability: For a sample of 116 college students the frequency with which each item was marked on the first administration was correlated with the frequency with which the same items were marked on a second administration. A coefficient of .93 was obtained.

Validity: Studies reviewed in the manual indicate the check list elicits a reasonably accurate report of what the student feels his problems are. Students who indicated that they had a great many problems also had a marked desire for counseling.

Norms: No norms are presented in the manual. Users are urged to study the distribution of problems among their own students.

Authors: Ross L. Mooney and Leonard V. Gordon.

Publisher: The Psychological Corporation,

522 Fifth Avenue,

New York 18, New York.

SRA Youth Inventory

This inventory contains 298 statements about matters which young people frequently consider problems. The person checks those statements which "express something that has been a problem" to him. The inventory yields a score for each of the following areas: (1) My School, (2) After High School, (3) About Myself, (4) Getting Along With Others, (5) My Home and Family, (6) Boy Meets Girl, (7) Health, and (8) Things in General. A "basic difficulty score" may also be obtained. The inventory has no time limit. It is suitable for students in Grades 7 through 12.

Reliability: Reliability coefficients reported in the test manual range from .75 for "Health" score to .94 for "My Home and Family" score. They were based on a sample of 1000 students in Grades 9 through 12.

Validity: In the final analysis, the validity of this inventory or any similar one rests with the individual taking it. If he actually checks those problems which he feels are his, the inventory is a valid listing of the problems which the individual himself recognizes. But if validity is thought of as the accuracy with which the inventory measures degree of adjustment in each of the eight areas, then a significant relationship between the scores and criteria of adjustment must be demonstrated. This has not been done. The manual does, however, report one study of this type. Twenty-two of a total of 35 students rated well-adjusted by counselors had "basic difficulty scores" below the

50th percentile, and 36 of the 57 poorly-adjusted students had basic difficulty scores" above the 50th percentile.

Norms: Separate percentile norms for boys and for girls. Condensed norms by grade for rural boys, rural girls, urban boys, and urban girls. Percent responding to various items also given in manual.

Authors: H. H. Remmers and Benjamin Shubert

Publisher: Science Research Associates,

57 West Grand Avenue,
Chicago 10, Illinois.

The Adjustment Inventory

This inventory is available in a "student form" and an "adult form." The former is appropriate for use with students in Grades 9 through 16. This form contains 140 items dealing with behavior in the fields of (1) home, (2) health, (3) social, and (4) emotional adjustments. Obtainable is a separate score for each of the four fields and a "total adjustment" score. The adult form contains 160 items and deals with occupational adjustment in addition to the four areas of the student form. On both forms a separate score for each of the adjustment areas and a "total adjustment score" are obtainable.

Reliability: The corrected odd-even coefficient based on 258 college students was .93.

Validity: High school and college counselors and administrators selected a group of "well-adjusted" and a group of "poorly-adjusted" students. To these students the *Adjustment Inventory* was administered. The critical ratios of the differences between mean scores of these two groups were: home adjustment, 7.02; health adjustment, 6.58; social adjustment, 5.52; and emotional adjustment, 5.52.

Norms: Scores may be equated to phrases descriptive of degree of adjustment in each area. Separate norms for high-school and for college students.

Author: Hugh M. Bell.

Publisher: Stanford University Press
Stanford University, California

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Sociometric Appraisal of Students

THE personality measures described in the previous chapter give data which reveal how the individual perceives himself and his relationships to others. But these measures do not answer for the individual such questions as, "How do others perceive me?" or "Where do I stand in group situations?"

Careful and systematic observation can provide clues as to how others see and react to a particular student. Records of his participation in group activities can reveal additional clues. Counselors can also use sociometric devices. In general, these devices are relatively simple and can provide worthwhile information for teachers and counselors who wish to study a student's roles in various groups.

Whenever students come together, they participate in a social-interaction process. Throughout the process, the role of each student in the group may be seen. Jennings stated: "Some individuals come to the fore in the esteem of their classmates, while the efforts of others to join in are resisted. In this atmosphere, furthermore, some individuals are secure and happy, while others may be rejected or frustrated in their social participation."¹ As this quotation suggests, if counselors or teachers are really to understand a student, they must know the role he plays in the group and his satisfaction with that role.

Because group life is such an important aspect of everyday living, it is essential that students acquire some skills in situations involving social interaction. All students do not want to be or cannot be group leaders or "the life of the party." Yet

¹Helen Hall Jennings, *Sociometry in Group Relations* (Washington, D.C.: American Council on Education, 1948), p. 1.

many students who are unhappy with their place in the group can, with the help of counselors and teachers, achieve more satisfying group adjustments. To help identify those students who need aid in achieving the kind of group life which will contribute to their personal development, sociometric devices can be used to good effect.

The classroom should be regarded as a social situation as well as a learning situation. The class is a group; individual members of the class affect each other. As individuals, they may be better learners as well as better persons, if they have harmonious relations with others, feel secure, and are happy with their places in the group. Jennings points out that many experiments "testify to the fact that when the emotional shocks due to inadequate or discordant group life are removed and advantage is taken of the existing psychological affinities, there usually results a heightening and release of children's intellectual abilities along with a reduction of their thinking processes." Because sociometric devices can assist teachers in identifying "the existing psychological affinities," they have a real contribution to make to the school program.

For the reasons just set forth, this chapter on sociometric devices is included. Although the major use of these devices has been in the study of groups as such—i.e., the nature and structure of the group—their usefulness for gaining insight into the behavior of individuals within the group should not be overlooked. It is this latter use with which this chapter is concerned.

WHAT IS A SOCIOGRAM?

A sociogram is a map or chart of the interrelationships among the individuals within a group; it portrays the role of each person within that group. The nature of the sociogram will become apparent as the steps in making it are considered. **Here are the steps:**

1. *Choosing the question.* The first task in making a sociogram is to devise a question which will elicit from the members of the group expressions of their true feelings regarding the other members. Hence, the question should deal with a situation

¹*Ibid.*, p. 6.

which has meaning to every group member. It should be clear and concise. As an example, here is the question that Moreno posed to the student group with which he was working:

You are seated according to directions your teacher has given you. You are now given the opportunity to choose the boy or girl whom you would like to sit beside. Write down whom you would like first best, then whom you would like second best. Look around and make up your mind. Remember that next term the friend you choose may sit beside you.³

Others have used more direct questions, such as, "Who are your three best friends in this group?" or "With which three students in our class do you most enjoy being?" While questions of this type have the virtues of being clear, concise, and straightforward, they fail to indicate any reason why the information is being sought. Hence, such questions do not motivate the students to express their true preferences or feelings.

The most meaningful sociogram is obtained if the students feel that they will gain something they desire by accurately recording their opinions. "Which student would you like to have on a committee with you?" or "With whom would you prefer to work in science laboratory?" are questions which may have more meaning to the student.

There is divided opinion in regard to the use of negative questions such as, "Which students don't you want to have on your committee?" or "What three students do you dislike most?"

Those opposing the use of negative questions point out that many students resent being asked to reveal their dislikes. A student may get along with and like all the students in his class. True, he may like some better than others, but he may not be opposed to working with anyone in the class. This student, therefore, would probably find it difficult to name three students he does not like—he might tightly be irked if he were forced to do so. This type of objection to negative questions can be circumvented if each student is given an opportunity to decide for himself whether or not he will thus indicate his dislikes.

³ J. I. Moreno, *Who Shall Survive?* (Washington, D.C.: Nervous and Mental Disease Publishing Co., 1934), p. 18.

Another objection to negative questions is based on the risk that a generalization will be made where it is not supported by the facts. A student, for instance, may name three students he does not want on his committee in a social studies class. But will he react negatively to these same students when he meets them in other situations—say, on the playground, or in a hobby club, or at a school dance? In these situations, attributes other than those displayed in social studies class may well affect this student's preferences regarding his favorite associates.

Those who favor the use of negative questions contend that knowledge of rejections is as important as knowledge of acceptance or preference. In one of the authors' classes, for example, students were asked to name the one person they would like to have on their committee during a class project of several weeks' duration. Since the time of working together was to be so long, each of the students was given the opportunity to name the student he preferred to have on his committee and the student whom he absolutely did not want on his committee. When the preferences were charted, all except seven of the 28 students were chosen at least once; no student was chosen more than twice. Student X was chosen once. But when the rejections were charted, an entirely different picture resulted. Eleven of the 28 students were named at least once as not being wanted on a committee. Student X, however, was named eight times negatively. Had only preferences been called for, Student X's need for special attention might have gone unnoticed. Thus, negative questions, if answers are optional, are likely to provide information which contributes to a better understanding of particular students. To require all students to answer such questions is probably an unwise procedure.

2. *Asking the question* The question should be presented to the group in an informal and natural manner—that is, in such a way that it does not take on undue importance. In addition, when the question is put to the members of the group, they must be satisfied on two counts. First, they will want assurance that their replies will be kept confidential. Second, they will want and deserve some good reasons for answering the question.

With further reference to asking the question, Jennings has summarized the essential elements in these words:

Teachers should always feel free to answer any questions that may occur to the group, both before and during the writing [of answers], and should treat the occasion in a business-like manner. The most important things to remember about administering the test are: (1) to include the motivating elements in the introductory remarks, (2) to word the question so that children understand how the results are to be used, (3) to allow enough time, (4) to emphasize any boy or girl, so as to approve in advance any directions the choice may take, (5) to present the test situation with interest and some enthusiasm, (6) to say how soon the arrangements based on the test can be made, and (7) to keep the whole procedure as casual as possible.⁴

FIGURE 16

A 3 x 5 CARD ON WHICH HARRY A RECORDED HIS FIRST CHOICE, WALTER B, HIS SECOND, ROYCE C, AND HIS THIRD, RAYMOND H, IN A SOCIOMETRIC TEST

Harry A
 1. Walter B
 2. Royce C
 3. Raymond H

In administering this project, the teacher should provide each student with a 3 x 5 inch card. In the upper left corner of this card, the student should write his own name. Below it, he should then write the names of the students with whom he

⁴Jennings, *op. cit.*, p. 16.

prefers to associate. What he should do is illustrated in Figure 16 (page 331), a sample card filled in by Harry A.

3. *Collating the names.* If each student in the group fills out and turns in a card similar to that shown in Figure 16, the task of collating the names is relatively simple. The collected cards should first be arranged in alphabetical order, according to the students' last names. Then the choices appearing on the first student's card should be entered on the cards of those he chose. This same procedure is continued until all choices have been recorded on appropriate cards. Figure 16, for example, shows Harry A's card. He chose Walter B, Royce C, and Raymond H. Figure 17 shows Walter B's card. Because Harry's first choice is Walter, Harry's name and the numeral "1" are written at the right on Walter's card. Harry A's second and third choices are similarly indicated by placing his name and the appropriate numbers on Royce C's card and Raymond H's card.

In collating the names and choices appearing on the students' filled-in cards, the teacher or counselor may prefer to employ the method which has been suggested by Jennings.⁵

FIGURE 17

A 3 X 5 CARD ON WHICH WALTER B HAS RECORDED HIS THREE CHOICES; THE FACT THAT HARRY A CHOSE WALTER B FIRST HAS BEEN NOTED

Walter B	
1. Marian E	Harry A-1
2. Virginia F	
3. Frank D	

⁵*Ibid.*, pp. 17-18.

An adaptation of Jennings' "Sociometric Tabulation Form" is shown in Figure 18. In preparing such a form, the first step is to arrange the last names of the students in alphabetical order.

FIGURE 18
SOCIOMETRIC TABULATION FORM SHOWING CHOICES OF NINE STUDENTS

CHOSEN CHOOSER → ↓	HARRY A	WALTER B	ROYCE C	FRANK D	MARIAN E	VIRGINIA F	GERRY G	RAYMOND H	MARGUERITE I
Harry A		1	2					3	
Walter B				3	1	2			
Royce C	2				3			1	
Frank D	3	2				1			
Marian E	2						1	3	
Virginia F	1				2			3	
Gerry G	2	3			1				
Raymond H	1		3			2			
Marguerite I				3	2		1		
CHOSEN AS									
First Choice	2	1	0	0	2	1	2	1	0
Second Choice	3	1	1	0	2	2	0	0	0
Third Choice	1	1	1	2	1	0	0	3	0
Total	6	3	2	2	5	3	2	4	0

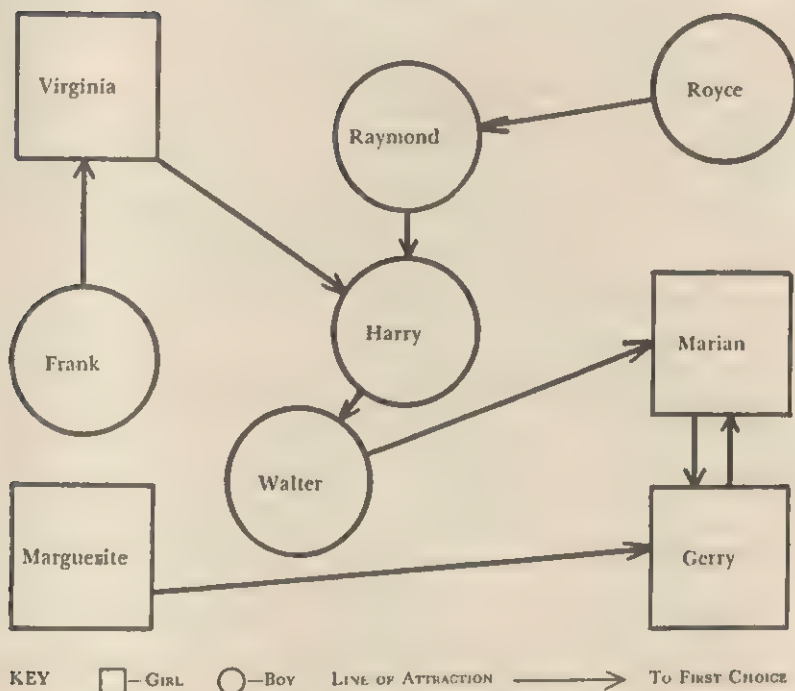
The second step is to list these names in the column at the left and in the row across the top. The "chooser" is shown in the left column; the "chosen," in the top row. The third step is to enter the choices in the chart. This is done by entering "1," "2," or "3" at the intersection of the row at the right of the choosing student's name and of the column under the chosen student's name. To show exactly how this is done, the choices listed in Figures 16 and 17 have been entered in the chart shown in Figure 18. Harry A's first choice was Walter B; thus a "1" is entered at the intersection of the row at the right of Harry's name and of the column below Walter's name. In like manner, Harry's second choice of Royce C and his third choice of Raymond H are indicated. Because Walter B listed Marian as his first choice, a "1" is placed at the right of his name and below her name.

The data portrayed in this filled-in form are then summarized as displayed in the four rows at the bottom of Figure 18. Harry A, for example, was chosen first by two students, second by three, and third by one. As Harry A's total shows, he was chosen six times. In contrast, Marguerite was not chosen by anybody. These examples point out one of the greatest advantages of using such a form—its convenience in summarizing the choices each student receives. The summary obtained may be exhibited in a graphic manner, as will be shown next.

4. *Plotting the sociogram.* The first choices of the nine students recorded in Figure 18 are portrayed graphically in the sociogram appearing in Figure 19. In this sociogram, circles symbolize boys and squares symbolize girls. Each symbol contains the name of a given student. His choice is shown by an arrow pointing from himself, the chooser, to the one he chose. For example, the arrow from Marguerite indicates that her choice is Gerry. The two arrows between Gerry and Marian indicate that they chose each other.

If the choices are recorded on 3 x 5 cards as just suggested, the drawing of the sociogram will be facilitated if the cards of students chosen most frequently are sorted into a separate pile. These cards should be placed near the center of a table. In constructing the sociogram in Figure 19, for instance, the teacher placed Harry's and Marian's cards in the center, be-

FIGURE 19
SOCIOGRAM BASED ON FIRST CHOICES ONLY
AS SHOWN IN FIGURE 18



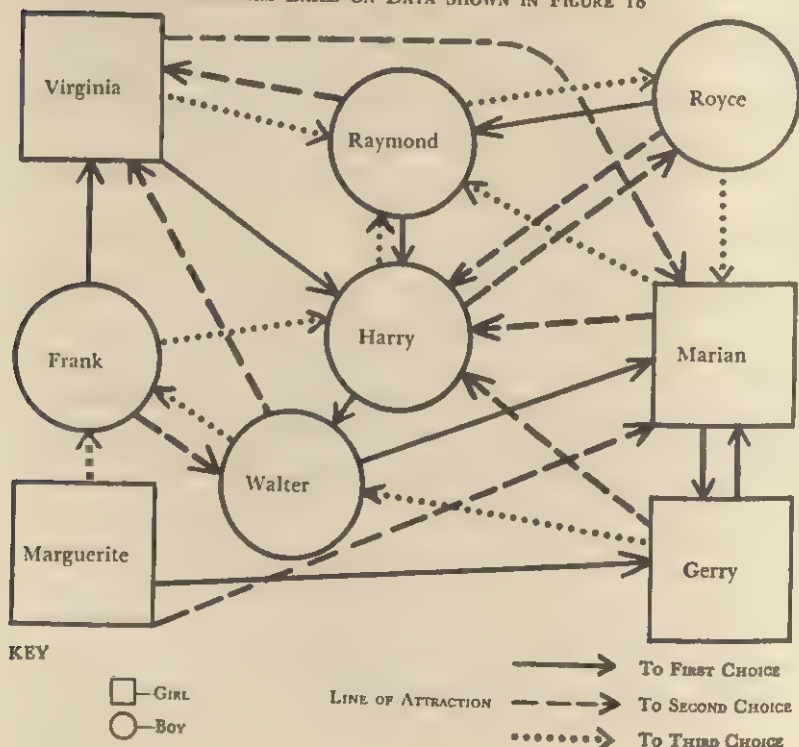
cause each of them received two first choices. Next to their cards he placed the cards of those students who chose Harry or Marian. Raymond and Virginia, for example, chose Harry, so their cards were placed near his. Away from the center of the table, the teacher placed the cards for students who received one first choice or no first choice. Typical of the latter student was Marguerite. After the teacher arranged the students' cards on the table, he drew the sociogram appearing in Figure 19.

After the first choices have been entered on the sociogram, the second and third choices should be recorded. In Figure 20, the teacher pictured all of the first choices shown in Figure 19. In addition, he portrayed all the second choices and all the third choices. To show whether a given choice was first, second,

or third, the teacher employed different kinds of lines—a solid line for first choice, a dash line for second choice, and a dotted line for third choice. The teacher might have used different colors for the lines designating each of the three levels of choices.

5. *Interpreting the sociogram.* At first glance, a sociogram such as that shown in Figure 20 is confusing. Even without close inspection, however, it can be seen that Harry and Marian received a large number of choices. It can also be seen that the choices are fairly well distributed among students. For guidance purposes, a detailed review of the choices made and received by individual students is necessary. This can best be done by concentrating on one student at a time and by tracing all the arrows to or from his symbol.

FIGURE 20
SOCIOGRAM BASED ON DATA SHOWN IN FIGURE 18



In the sociogram of Figure 20, it can be seen that Marguerite, for example, is an *isolate*. None of her three choices was reciprocated, and she was not chosen by anyone else. What kind of girl is she that no one chose her? If she is not new to the group, what has she done to be so completely left out? Is she too shy or too domineering to get along with other students? Are there other reasons for her isolation? Questions like these suggest themselves whenever an isolate is discovered in a sociogram.

The necessity of plotting more than first choices can be seen by comparing Figures 19 and 20. In the former, Marguerite, Frank, and Royce all appear to be isolates. In the latter, only Marguerite, who was chosen by no one, seems to fit that description.

In Figure 20, tracing the arrows from Gerry reveals that she has a *mutual* or *reciprocated* choice with Marian—that is, they chose each other. A harmonious relationship between the two may be inferred. The second choice of each of these girls was Harry, neither of which choice was reciprocated by him. Each of the girls directed her third choice to a boy who did not return it. Each girl was chosen by the isolate, Marguerite. Although Gerry and Marian at this point seem to be similar, striking differences appear when the choices which Marian received are compared with those obtained by Gerry. Marian was chosen by three girls and two boys—more than half of the group. Gerry, however, was chosen by only two girls and no boys. Marian appears to be better accepted in this group than does Gerry. Why do the boys choose Marian but not Gerry? If, as indicated by her choice of two boys, Gerry wants male companionship, why is she not chosen by a single boy?

The choices of Harry, Royce, and Raymond indicate that they make up an *in-group*. Note that they have reciprocated each other's choices. Six of their nine possible choices are concentrated among themselves. Only in rare instances will all possible choices be confined to members of an in-group. This is due partly to the fact that within few groups does an in-group form itself into an exclusive clique and partly to the fact that, when each student is required to make three choices, the smallest self-contained group must be composed of at least four

students. While exclusively mutual choices among four persons are rare when three choices are required, they are not uncommon when only one choice is recorded. Thus, when analyzing a sociogram, the number of choices required of each student must be taken into account.

In the sociogram depicted in Figure 20, Marian has only a tenuous relationship to the in-group because she received Royce's third choice instead of his first or second choice. Marguerite, Gerry, and Frank appear to be excluded from the in-group because they were not chosen by Raymond, Royce, or Harry. The reasons for exclusion of these three students from the in-group, of course, cannot be found in the sociogram. Like so many guidance techniques, the sociogram points to a condition but does not explain its causes. Nevertheless, the sociogram does provide clues which can lead to a fuller understanding of the individuals within a group.

In order to make a few of these clues more specific, some investigators have suggested the assignment of numerical weights to the various choices. Frank L. Sievers, in an unpublished paper, has proposed that first, second, and third choices be assigned weights of five, three, and one, respectively, and that these weights be totaled to provide an index of acceptance. By using data from Figure 18, his method is illustrated in Table 23. There the first four columns at the left are the same as the last four rows of Figure 18. The sums of the weighted choices are shown in the fifth column. For Harry A, the two first choices weighted at five each equal 10 points. The three second choices, at three each, equal nine points. And the one third choice equals one point. The sum of these weighted choices is 20. The sixth column presents the ranks of the students based on total times chosen (Column 4). And the seventh column gives their ranks based on the sum of weighted choices (Column 5).

Comparison of the ranks shown in the last two columns reveals substantial agreement. In both columns, for example, Harry ranks first and Marguerite last. When only the number of times chosen (Column 6) is considered, Walter ranks higher than Gerry, but Gerry ranks higher than Walter when the choices are weighted (Column 7). This reversal of ranks may be expected occasionally.

TABLE 23

COMPARISON OF RELATIVE RANKS BASED ON "TOTAL NUMBER OF TIMES CHOSEN"
WITH RANKS BASED ON "SUM OF WEIGHTED CHOICES"
(BASIC DATA SHOWN IN FIGURE 18)

	NUMBER OF TIMES CHOSEN				Sum of Weighted Choices (5)	RANK BASED ON	
	First (1)	Second (2)	Third (3)	Total (4)		Total of Likes Choices (6)	Sum of Weighted Choices (7)
Harry A.	2	3	1	6	20	1	1
Walter B.	1	1	1	3	9	4.5	5
Royce C.	0	1	1	2	4	7	7
Frank D.	0	0	2	2	2	7	8
Marion E.	2	2	1	5	17	2	2
Virginia F.	1	2	0	3	11	4.5	3
Gerry G.	2	0	0	2	10	7	4
Raymond H.	1	0	3	4	8	3	6
Marguerite I.	0	0	0	0	0	9	9

The greatest value of the Sievers method is that the sum of weighted choices has a greater range (in this example, 0 to 20) than does the total number of times chosen (in this example, 0 to 6). The Sievers method, furthermore, is less likely to result in ties in the ranks assigned. In Column 7, there is no tie in rank; in Column 6, however, two students have ranks of 4.5, and three students have ranks of 7.

Zeleny used a more complex method of weighting choices in his study of the choices of aviation cadets.⁴ He indicated the "social status" of a cadet by a weighted average of choices and rejections, as well as by the average deviation of choices. In publishing his formulae for computing "social status," Zeleny indicated his belief that they are applicable to other group situations.

WHAT IS THE "GUESS WHO" TECHNIQUE?

In one of their classic studies of character, Hartshorne and May⁷ developed and used a technique similar to sociometry.

⁴Leslie D. Zeleny, "Selection of Compatible Flying Partners," *American Journal of Sociology*, 1111 March, 1947, 121-131.

⁷Hugh Hartshorne and Mark A. May, *Studies in Service and Self Control* (New York: Macmillan and Company, 1929).

They devised a test called "Guess Who." This test consists of a series of snapshot descriptions of students, such as:

Here is the good student. He (or she)
always has the homework done and is
ready to answer questions in class.

The foregoing is one of the descriptions which is complimentary in nature. Other descriptions, however, are definitely not complimentary, as:

This student is the bully. He (or she)
annoys and picks on those who aren't big
enough to fight back.

In taking this test, every student in the group responds to each description by writing down the name of any student whom he thinks the description fits. A picture of a particular student is obtained by noting with which description his name is associated by other students. The "Guess Who" device, like a sociogram, can provide significant clues for further study of individuals.

RELIABILITY AND VALIDITY OF SOCIOMETRIC METHODS

Judging from experience and from informal studies, the reliability of sociograms appears to be reasonably satisfactory for guidance purposes. It should be remembered, however, that the choices of individuals may change frequently. In a group of young children, for example, these choices are unstable, often changing from one day to the next. With high-school and college students, the choices and their patterns are somewhat more stable. Even so, changes of choice are often found.

As yet, the validity of sociometric techniques has not been well established. Workers in many kinds of group settings, such as schools,⁸ social agencies,⁹ armed forces,¹⁰ and industrial plants,¹¹ have testified to the effectiveness of the sociogram. However, there is great need for additional research to establish the validity as well as the reliability of the sociogram.

⁸Jennings, *op. cit.*

⁹Moreno, *op. cit.*

¹⁰Zeleny, *op. cit.*

¹¹Fritz Roethlisberger and W. J. Dickson, *Management and the Worker* (Cambridge: Harvard University Press, 1939).

After reviewing the literature on sociometry, George W. Murphy, in an unpublished study, concluded that the sociometric test is only as valid as the teacher or counselor makes it. To increase the test's validity, therefore, the teacher must do the following: (1) Take into consideration the student who has a tendency to shy away from placing names on responses. (2) Give adequate directions to make the student's choices seem important to him. (3) Establish a level of rapport with the group sufficient to insure that the task is acceptable to its members.

Sociometric devices provide worthwhile leads for further study of individuals. Although they yield data that should not be taken as completely reliable or valid indicators of personality, these data have value because, as Cronbach has pointed out, "how one's associates view him is itself significant even when they misjudge him. Reputations do in general correspond to behavior."¹²

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¹²Lee J. Cronbach, *Essentials of Psychological Testing* (New York: Harper and Brothers, 1949), p. 407.

Determining Special Aptitudes

ED certainly is a *gifted* musician." "Ruth has a *flair* for art." "Jim is so *handy* with tools." "Joe is a *natural* athlete." Such words as "gifted," "flair," "handy," and "natural" appear often in everyday conversation. They convey the idea that some students appear to have the knack for doing certain things. The existence of these specialized talents has been recognized by psychologists, who refer to them as "aptitudes." This designation is now commonly used by counselors and teachers.

Unfortunately, there is no definition of "aptitude" which is accepted by all psychologists. The *Dictionary of Psychology* published in 1934 defines aptitudes as "a condition or set of characteristics regarded as symptomatic of an individual's ability to acquire with training some (usually specified) knowledge, skill, or set of responses."¹ Using this definition as his starting point, Bingham in 1937 defined aptitude as "a condition symptomatic of a person's relative fitness, of which one essential aspect is his readiness to acquire proficiency—his potential ability—and another is his readiness to develop an interest in that ability."² Super points out that both the foregoing definitions imply "that an aptitude is not necessarily an entity, but rather a constellation of entities: the set of characteristics which enables one person to learn something may even be different from that which enables another person to learn the same thing."³

¹H. C. Warren, *Dictionary of Psychology* (Boston: Houghton Mifflin and Company, 1934).

²Walter V. Bingham, *Aptitudes and Aptitude Testing* (New York: Harper and Brothers, 1937), p. 18.

³Donald E. Super, *Appraising Vocational Fitness* (New York: Harper and Brothers, 1949), p. 59.

For this reason, Super favors the use of the word aptitude "to convey the idea of a discrete, unitary characteristic which is important in varying degrees in a variety of occupations and activities."⁴ Super's point of view makes for precision in defining aptitudes, but the same precision is not found in measures of aptitude. With few exceptions, the instruments now available for testing aptitudes measure a variety of factors about whose unity little is known.

A more general definition of aptitude has been proposed by Hahn and MacLean. They point out that "aptitudes are correctly referred to as latent potentialities, undeveloped capacities to acquire abilities and skills and to demonstrate achievements."⁵

Briefly, aptitudes may be regarded as potentialities which can be trained into special skills. For example, clerical aptitude may be the potentiality which can be trained to do bookkeeping or accounting or filing. Mechanical aptitude may, with training, become proficiency or skill in punch press operation, welding, pattern-making, and other mechanical trades.

CAN APTITUDE BE INFERRED FROM ACHIEVEMENT?

What a person achieves is of necessity influenced by his potentiality (or aptitude) for the activity. Therefore, achievement tests are often good indicators of aptitude. Assume, for example, that a group of students has just completed a year's course in elementary algebra. If these students are given an algebra achievement test, a few of them will make very good scores, and a few will make very poor scores. Most of the students, however, will probably make scores which are near the average score of the group.

Assume now that all of the students in the group had had equal opportunity for study and equal motivation to learn. Then it may be said that the students who make high scores on the achievement test have more aptitude for algebra than those who make low scores. Then also it may be said that the differ-

⁴*Ibid.*, p. 58.

⁵By permission from *General Clinical Counseling* by Hahn & MacLean. Copyright, 1950. McGraw-Hill Book Company, Inc.

ences between the good and the poor students in their potentiality for success in algebra were present on the first day of the year's course.

A number of factors may have contributed to the fact that some students originally had greater potentiality to master algebra than did others. These factors may include: (1) prior experience in arithmetic, (2) innate capacity for handling abstract symbols, or perhaps (3) familiarity with testing. Such factors, moreover, vary from individual to individual, each having his own unique background, inherited and environmental. Despite these variations in background, the better students had some characteristics in common which distinguished them from the poorer students, as a group. Whether or not these characteristics were discreet and unitary is an academic question. The important thing, from the guidance worker's point of view, is that these characteristics, singly or in combination, were giving some students a greater potentiality for success in algebra.

A student, furthermore, may be stronger in certain aptitudes than he is in others. Throughout his school career, for instance, his science marks may be higher than his social science marks. If so, he may be said to have more aptitude for science study than for social science study, for all practical purposes. Thus, by examining a student's past record, the counselor can obtain many valuable clues regarding the student's comparative potentiality for success in different fields of study. These clues have definite meaning; what a person has done in the past is ordinarily a good indication of what he can do in the future.

Counselors, however, need other methods of judging aptitude. In many situations, the counselor will find it necessary and advisable to measure a student's aptitudes in advance of training instead of using achievement at the end of training as an index of original aptitude.

Tryout and exploratory courses have their place, but they are sometimes wasteful of the student's time and effort. To prevent such waste, students need help in selecting those trial situations where they have some hope of success and in avoiding those where their aptitudes indicate potential failure.

For the purpose of measuring aptitudes, many tests have been developed. Certain types of these special aptitude tests, which appear to be most appropriate for the use of school counselors, will be discussed later in this chapter. These tests all have one characteristic in common: they are designed to measure one or more characteristics which are believed to be indicative of potentiality for one or more tasks. In addition to this common purpose, they have three important limitations in their use.

WHAT ARE THE LIMITATIONS OF SPECIAL APTITUDE TESTS?

1. *Special aptitude tests forecast failure more accurately than they forecast success.* Consider a student who is trying to decide whether to become a musician. A musician must be able, among other things, to distinguish tones, to maintain rhythm, and to move his fingers dextrously over the controls of his chosen instrument. These are a few of many characteristics which a musician should have in order to achieve success. When the counselor is faced with the task of helping a student to make a wise decision, he cannot obtain tests which accurately measure all of the required characteristics for musical success.

During the counseling process, the student's interests, the opportunities he has for securing the necessary training, and his past achievements will all come up for review and evaluation. As a result, both the counselor and the student may agree that a special aptitude test will be helpful. Suppose that they decide on the *Seashore Measures of Musical Talent*. This test yields scores in the areas of pitch, loudness, time, timbre, rhythm, and tonal memory.

Validity studies of the Seashore test have indicated that those who make high scores are more likely to complete musical training and achieve professional status than those who make low scores. These studies have not, however, demonstrated that all students who make high scores will achieve professional status.

Suppose that a student makes high scores on the test. Then the counselor may with justification inform him of the greater likelihood of his success than if he had made low scores. That is

about as much as the counselor can accurately say. Suppose that this student makes low scores, showing that he was unable to discriminate difference in pitch. Then the counselor may rightly indicate that the student has little likelihood of success either in training or in achieving professional status in the musical world. The counselor, in fact, may make such a statement with considerable assurance.

This limitation of special aptitude tests has been summarized by Froehlich and Benson in these words: "It is easier to predict failure than success. Success requires at least a minimum of a wide variety of aptitudes. Even the presence of all these aptitudes can be offset by lack of motivation, social pressures, or a host of other factors. Probable failure can be predicted if we can isolate a single major deficiency. This same principle is true for tests of scholastic aptitude also. A genius may or may not succeed in college, but it is almost certain that a moron never will."⁶

2. *Differences between special aptitude test scores must be interpreted cautiously.* If the counselor uses two special aptitude tests, it is almost certain that they will have been standardized on different groups of students. For example, the *Minnesota Vocational Test for Clerical Workers* provides norms based on samples of employed men and women clerical workers, and of high school students. The *Revised Minnesota Paper Form Board* provides a variety of norms based on males and females by ages and by different types of skills.

To see exactly what the difference in norms implies, suppose that a twelfth-grade student has taken several aptitude tests which were standardized on different groups. On the clerical aptitude test his score was equal to the 75th percentile when compared with high-school seniors. On the mechanical aptitude test, he ranked at the 50th percentile when compared with seniors in a vocational school.

At first glance, this student appears to have greater aptitude for clerical work than for mechanical work. But is this really true? His score on the clerical aptitude test was compared with the norms for twelfth-grade students in a general high school;

⁶Clifford P. Froehlich and Arthur L. Benson, *Guidance Testing* (Chicago: Science Research Associates, 1948), p. 76.

Hence this norm group was composed of a large number of students, not just of students specializing in commercial courses. Therefore, a counselor should probably discount somewhat the student's rank at the 75th percentile. The student's score on the mechanical test, however, was compared with the scores made by a norm group which was made up of students in a vocational school. In this select group his rank in mechanical aptitude was at the 50th percentile. Thus a counselor should probably place slightly more reliance on the student's rank on the mechanical test than he placed on the student's rank in the clerical test, as indicators of aptitudes.

The closer the resemblance between the norm group and the group with which the student will probably compete in using his aptitude, the more meaningful the student's percentile rank is. That is why, whenever possible, norms for special aptitude tests should be based upon persons who are actually engaged in the activity rather than upon an unselected group of students.

In making allowances for differences in test scores that result from variations in norm groups, the counselor can follow no hard-and-fast rule. But, as a minimum, he should be familiar with the norm group for each of the tests he interprets. This means that he will not accept observed differences in percentile ranks or standard scores at face value.

When interpreting the significance of the difference between scores or ranks obtained on two tests in the same test battery, the counselor faces another complication. The various tests in an aptitude battery, say, were standardized on the same group of students. Even so, the scores on these tests and the comparisons between these scores must be interpreted cautiously. Here is why. No one of the tests is perfectly reliable; also, the difference between two test scores is no more reliable than the reliability of either test.

With further reference to this matter, statisticians have pointed out that, even though two tests are uncorrelated, the reliability of the difference between two scores on these tests will not be greater than the average of the two tests' reliabilities. Statisticians have also demonstrated that, if the two tests are correlated, the reliability of the difference between the scores

will be less than the average of the two tests' reliabilities. Hence, when the counselor interprets the difference between any two special aptitude test scores, he should remember that the difference is likely to be less reliable than are the separate scores themselves.

3. *Special aptitude tests have limited usefulness in guidance programs.* There are several reasons for this: First, many of the so-called aptitude tests measure characteristics which do not appear to approach maturity until the student is in his middle or late teens. Hence, if these tests are used with a young or immature student, they may give an erroneous impression of his aptitudes. Second, the predictive significance of many aptitude tests has not yet been demonstrated. Even though a particular test may measure a given characteristic reliably, it is of little value to the counselor until the relationship between scores on the test and the future success of the students has been determined.

Because validity studies of special aptitude tests must necessarily be made on a longitudinal or long-term basis, these studies are very expensive in both time and money. Consequently, research regarding the validity of these tests has been neglected. Also, as a result, the special aptitude tests which are currently available and which meet acceptable standards cover only a limited number of all the important aptitudes presumed to exist. For many occupations, there are no special aptitude tests with demonstrated predictive power. In the light of these conditions, counselors will find it difficult to justify the group use of many special aptitude tests.

HOW CAN CLERICAL APTITUDE BE MEASURED?

Clerical aptitude has two commonly accepted meanings. In one sense it designates a group of characteristics which predict success in clerical work. According to this definition, the desired characteristics might include at least the following: average intelligence; the ability to spell; the ability to perceive words and numbers quickly and accurately; and a modicum of dexterity. Taken together, these characteristics indicate potentiality for a variety of clerical jobs. In another sense, the term "clerical aptitude" is used to describe a unitary trait. This trait appears

to be so important in clerical work that it is frequently referred to as "clerical aptitude." It involves the ability to perceive accurately and quickly words, letters, or numbers. In reviewing factor analyses of clerical tests, Bennett and Cruikshank describe this characteristic as "speed and accuracy in carrying out simple tasks, many of which are of clerical variety."⁷

A number of the so-called clerical aptitude tests are heavily loaded with this speed-and-accuracy-of-perception factor. But one test, the *Minnesota Clerical Test*, stands out above all others in the number of research studies which have explored its nature and use. This test is described here.

Minnesota Clerical Test

This test consists of two parts, each containing 200 items. In the first part, number comparison, the task is to compare two numbers such as 84736 and 84736, or 12473 and 12472. If the two numbers are the same, the examinee places a check on the line between them. In the second part, the task requires the examinee to compare two names and to check those which are identical. Clearly such items as the foregoing are not difficult, but, because so little time is allowed, a person who makes high scores must work rapidly. If a person sacrifices accuracy for speed, he is penalized for wrong answers by deductions made in arriving at his scores. In general, this test may be thought of as measuring two highly correlated factors (speed and accuracy), both of which are reflected in the over-all or total score.

Reliability: Based on 138 clerical workers, the reliability on test-retest using comparable forms was found to be .90. Based on other groups, the majority of studies have reported reliabilities of .85 or above.

Validity: Bennett and Cruikshank state: "Many studies have indicated the suitability of the test for predicting success in clerical work. Some of these are summarized in the manual. Test scores against ratings [correlations between scores and ratings] for clerical workers have varied from .28 to .42. Combined with personal history rating these [correlations] are in the neighborhood of .65. Significant differences between group aver-

⁷ George K. Bennett and Ruth M. Cruikshank, *A Summary of Clerical Tests* (New York: The Psychological Corporation, 1949), p. 17.

ages are found for a number of groups, such as fast and slow typists, employed and unemployed clerical workers, clerical workers and others, and the like."⁸

Norms: Although the manual presents norms by age and grade, the most appropriate norms for use in counseling appear to be those based on specific occupational groups with which the student must eventually compete if he enters a clerical occupation.

Authors: Dorothy M. Andrew, Donald G. Paterson, and Howard P. Longstaff.

Publisher: The Psychological Corporation,
522 Fifth Avenue,
New York, New York.

The *Minnesota Clerical Test*, as just mentioned, measures speed and accuracy of perception. These factors are important, but other factors also influence a person's potentialities for success in clerical occupations. The counselor, therefore, should use this test in combination with other information about the student. This information should include some measure of mental ability; a student planning to enter routine clerical occupations should probably have an I.Q. of at least 90. Students planning to enter higher-level clerical jobs such as secretary or accountant should have higher levels of mental ability.

While not a clerical aptitude in the strict sense of the term, a student's facility in language and arithmetic obviously affects his chances of success both in training and on the job in some clerical occupations. Hence, the counselor should also consider the student's achievements in the areas of language and arithmetic.

Dexterity, according to some authors, is an important aspect of clerical aptitude. As yet, however, their contentions have not been borne out by research studies. Perhaps the research instruments required to identify the dexterities essential for clerical work have not been developed. Apparently such work demands no more than the minimum dexterity possessed by physically normal individuals. At the present time counselors have little justification for regarding dexterity as an important factor in determining clerical aptitude.

⁸*Ibid.*, p. 89.

HOW CAN MECHANICAL APTITUDE BE ASSESSED?

The term "mechanical aptitude" is used loosely to designate potentiality for a wide variety of mechanical occupations. The counselor should recognize that potentiality for such occupations is *not* determined by the presence or absence of a single, unique trait. What is referred to as mechanical aptitude is, in reality, a number of aptitudes. These are more or less independent of each other. In various degrees and combinations they determine potentiality for each of the many jobs subsumed under the heading of mechanical occupations.

Certain of these so-called mechanical aptitudes, as identified by factor analyses, appear to be composed of such a unitary factor as spatial perception. Although the existence or nature of other factors has not been clearly established, most of these factors appear to be clusters of aptitudes rather than unitary traits. In everyday conversation, for example, it is not uncommon to hear a reference made to a person's *dexterity* as though it were an aptitude that applied to all of his activities. According to the research literature, however, it is more appropriate to speak of *dexterities* and to identify these specifically, as finger dexterity, arm dexterity, and so forth. Super, in what appears to the authors to be an oversimplification, speaks of "two types of manual dexterity: gross and fine."⁹

Whether mechanical aptitude is composed of discrete aptitudes or clusters of traits is a matter which calls for further investigation. At present, it can be said only that mechanical aptitude consists of at least three more or less independent factors. These factors are mechanical comprehension, spatial perception, and psychomotor. In addition to these three, mental ability (as discussed in Chapter 10) is important in many higher-level mechanical occupations. All these factors must be taken into account by those who are considering their potentialities for mechanical occupations.

The Nature of Mechanical Comprehension

The ability to comprehend and utilize physical principles appears to be a rather discrete factor, when scholastic ability

⁹Super, *op. cit.*, p. 184.

is held constant. In a homogeneous group, such as a class of engineering students, there is a relatively small range in scholastic ability. In this group also the correlation between scholastic ability and mechanical comprehension is usually low. In other words, tests of mechanical comprehension measure something other than what is measured by scholastic ability tests. However, in a heterogeneous group, such as men being drafted for army service, the correlation between scholastic ability and mechanical comprehension is higher than it is in a homogeneous group.

Whatever the group tested, a mechanical comprehension test and a scholastic ability test may appear to measure a common function, as indicated by the correlation between the scores obtained. If both tests have rigid time limits, speed may be the common factor producing the correlation. More likely, however, this correlation is due to the common factor identified as reasoning.

In working with students, the counselor should recognize that the correlation between mechanical comprehension and scholastic ability is positive but usually low. This is clearly demonstrated by data obtained in the standardization of the *Differential Aptitude Tests* battery described in Chapter 10. In this battery, the test of *Mechanical Reasoning* (a revision of the mechanical comprehension test described later in this chapter) was found to correlate about .50 with tests of *Verbal Reasoning* and *Abstract Reasoning*.¹⁰ In short, even though the two kinds of tests measure a common factor, they also measure different factors which are extremely important. Therefore, the counselor should consider the inclusion of both kinds of tests in his guidance work.

Types of Mechanical Comprehension Tests

Mechanical comprehension may be measured by two types of tests—apparatus tests and paper-and-pencil tests. An example of the apparatus type is the *Minnesota Mechanical Assembly Test*. In this test the examinee is required to assemble a variety

¹⁰George K. Bennett and others, *Differential Aptitude Tests Manual* (New York: The Psychological Corporation, 1947), p. c-8.

of commonplace mechanical devices such as a bicycle bell, a monkey wrench, and a mouse trap. Such apparatus tests, however, have not been as widely used as paper-and-pencil tests because they (1) require relatively expensive equipment, (2) must be individually administered, and (3) have complex and time-consuming procedures. These are reasons enough for guidance workers to look for easier means of measuring mechanical comprehension.

It appears also that apparatus tests measure a lower level of mechanical comprehension than do paper-and-pencil tests. If this is correct, then it might be expected that paper-and-pencil tests would be better predictors of marks obtained in theory courses than apparatus tests would be.

Because of their convenience, paper-and-pencil tests of mechanical comprehension are receiving more and more attention from research workers. These tests also are proving of value as guidance tools. The *Test of Mechanical Comprehension*, which is among the most widely used tests of this type, is described briefly here.

Test of Mechanical Comprehension

Several forms of this test are available. Form AA, containing the easiest items, is appropriate for use with unselected students. Form BB is more difficult than Form AA, but not as difficult as Form CC. The norms for Form CC are based on engineering students. Form WI is designed for females.

The test is made up of items consisting of drawings about which the examinee answers questions. These items are designed to measure comprehension of the application of physical principles rather than knowledge of mechanical equipment and its use. For instance, the test is so constructed that examinees who have studied physics do not appear to make appreciably higher scores than those who have not taken this subject of study.

Reliability: The split-half reliability coefficients, as reported in the manuals accompanying the several forms, are all .80 or above.

Validity: The test appears to correlate somewhat highly with other measures of "mechanical aptitude." In two groups

of applicants ($N=136$ and $N=220$) for mechanical training, Form AA scores were correlated with scores on the *MacQuarrie Test for Mechanical Ability*. The coefficients of correlation obtained were .40 and .48. In one of the aforementioned groups, the test correlated .54 with the *Detroit Mechanical Aptitude Examination* and .59 with the *Revised Minnesota Paper Form Board*. The test has been used in military, industrial, and educational institutions. It appears to be measuring important factors when classroom marks and supervisors' ratings are used as criteria.

Norms: Norms for various groups, such as students, applicants for training or work, and employed workers, are given in the test manuals.

Authors: George K. Bennett with various collaborators and assistants for the several forms of the test.

Publisher: The Psychological Corporation,
522 Fifth Avenue,
New York, N.Y.

Guilford has stated that "tests developed to measure mechanical comprehension very often measure the power to visualize almost as much as they do a mechanical factor, and this mechanical factor is one of knowledge or experience rather than one of comprehension."¹¹ This statement should be kept in mind by the counselor when he interprets scores on tests such as the *Test of Mechanical Comprehension*. More specifically, in interpreting a student's score, the counselor should take into account the student's mechanical experience (employment, hobbies, reading) and education (related subjects as well as specific mechanical training). He should also estimate the student's "power to visualize," even though this is a relatively undefined aptitude.

HOW CAN SPATIAL PERCEPTION BE TESTED?

Several factor analyses of human abilities have identified a spatial factor. Findings from these analyses have influenced test-makers, as can be seen by examining the two mental ability test batteries described in Chapter 10. The *SRA Primary Mental*

¹¹J. P. Guilford, "Factor Analysis in a Test Development Program," *Psychological Review*, LV, No. 2 (March, 1948), 81.

Abilities test, an outgrowth of Thurstone's factor analyses, contains a subtest called "Space." The *Differential Aptitude Test* battery, also based in part on factor analyses, includes a test of "space relations."

Tests of spatial perception are paper-and-pencil tests, with few exceptions. The *Minnesota Spatial Relations Test*, an apparatus test, consists of four form boards. In each board the examinee fits appropriate pieces selected from a scrambled assortment of varishaped geometrical figures. Super reports correlations of .59 and .65 between this test and the *Revised Minnesota Paper Form Board*.¹²

The *Revised Minnesota Paper Form Board*, an early paper-and-pencil test, has been the subject of much study over the years. It appears to measure a reasonably separate trait, although some investigators have reported substantial correlations with mental ability test scores and moderate correlations with mechanical comprehension test scores. The moderate correlations between space perception and mechanical comprehension tend to support Guilford's statement quoted earlier in this chapter.

In measuring mental ability, it is clear from observation that many tests and particularly so-called nonverbal tests make use of spatial items. These nonverbal mental ability tests correlate more highly with spatial perception tests than do verbal mental ability tests. This fact should be kept in mind by the counselor in deciding which mental ability test to use and in interpreting what the mental ability test score means.

The *Revised Minnesota Paper Form Board* is selected for description here for several reasons. First, this test has been widely studied and used by guidance workers. Second, it is typical of the currently available spatial perception tests. And third, it is a test with which counselors should be familiar because of its usefulness as a guidance tool.

Revised Minnesota Paper Form Board

This spatial perception test is designed to measure the ability to mentally manipulate objects in space. Each item presents a geometric pattern; the examinee must select which

¹²Super, *op. cit.*, p. 291.

one of five sets of separate parts should be assembled to make up that pattern. This test may be used in Grade 7 and above. It is available in two forms, each of which requires 20 minutes of working time.

Reliability: Studies indicate that the corrected odd-even reliability of this test equals or exceeds .85 for most groups of students and adults.

Validity: Many investigations have indicated the relationship of scores on this test to school marks and to various occupational criteria. It appears that engineering students receive higher scores than do other students. There is marked relationship between test scores and marks in mechanical drawing. Test scores are positively correlated with marks and ratings received by dental students. A lower but nonetheless significant relationship was found between marks in art and test scores. Occupationally, the test apparently measures factors associated positively with success as apprentice pressmen and as various types of inspectors, machine operators, and packers.

Norms: The manual presents norms for ages nine and up, norms for successive grades, and norms for a variety of specialized educational or occupational groups. Because the norms have been accumulated over a period of years by various investigators in many sections of the country, the differences observed between norm groups are somewhat difficult to interpret.

Authors: Rensis Likert and William H. Quasha.

Publisher: The Psychological Corporation,
522 Fifth Avenue,
New York 18, N.Y.

HOW CAN PSYCHOMOTOR ABILITIES BE MEASURED?

Psychomotor tests were among the instruments commonly used in the early psychological laboratories. There these tests were employed to throw light on various psychophysiological phenomena, for example, reaction time. In the guidance workers' hands today, however, such tests are used to study the nature of the individual's psychomotor abilities rather than psychophysical behavior in general.

Characteristics of Psychomotor Abilities

Cronbach defines *psychomotor* as "referring to all tests demanding mind-muscle co-operation" and points out that such a definition covers a great many tests.¹³ In his summary of factor analyses of psychomotor tests, however, Cronbach concluded that, although numerous other important factors are measured by these tests, the following group of factors has been clearly identified: "spatial, perceptual, manual dexterity, stereotyped rapid movement, steadiness, and strength."¹⁴

Psychomotor ability appears to have a negligible correlation with mental ability. A psychomotor test might require the examinees to push brake pedals immediately when a red light flashes. The examinees' scores in terms of shortness of reaction time would correlate insignificantly with the scores they would obtain on a mental ability test. However, if the examinees had to manipulate several pedals or switches in the correct order according to the color of the light being flashed, the correlation between psychomotor ability and mental ability would probably be higher. In this case, a higher order of mental ability is called for. However, psychomotor tests which do not require the examinee to respond with such complex reactions may, for all practical purposes, be thought of as measuring factors independent of mental ability.

Uses of Psychomotor Tests

Psychomotor tests have been used in a variety of situations. The outstanding fact that emerges from reports of their use is the specificity of their application. One test of finger dexterity, for example, may correlate with job success on a particular job fairly well; when another test of finger dexterity is used, however, the correlation may be negligible. Likewise, although two jobs may appear to be quite similar, the same psychomotor test may not correlate equally with success on both jobs.

The apparent specificity of psychomotor tests may be the result of differences in research techniques and differences in the samples of examinees tested. It may also be due to differ-

¹³Cronbach, *op. cit.*, p. 216.

¹⁴*Ibid.*, p. 216.

ences caused by psychomotor test equipment. In World War II, for example, many psychomotor tests were used by the Army Air Forces. The results showed that unless all the test devices at the various centers were carefully calibrated and made consistent with each other, the inter-device differences were so great that these scores were not comparable. Much of the published research on psychomotor tests is based on experiments using different pieces of equipment, which may or may not have yielded comparable scores. For this reason among others, it is difficult to determine the usefulness of such tests for guidance purposes.

If a counselor is working in a setting in which he has opportunity to develop local validation data, he may find that psychomotor tests are useful devices. From what is now known about such tests, however, the counselor will probably find most useful those tests which are designed solely to measure manual dexterities. As some studies have indicated, certain dexterities are required for those jobs in which the use of hands is important—that is, mainly in mechanical, professional, and clerical occupations. In measuring these dexterities, for example, tests have been employed most effectively in the determination of factors associated with success in semiskilled factory work, such as that done by packers and assemblers of various types. One of these manual dexterity tests, *The Purdue Pegboard*, is described here.

The Purdue Pegboard

This apparatus test is designed to measure manual dexterity. The *Pegboard* is a 12 by 18 inch board. It has four cups for pegs, collars, and washers. It also has two columns of holes through its center. In the first part of the test, the examinee is required to insert the pegs in the holes, using hands singly and then together. His score is the number of pegs he inserts during the time allowed. In the second part of the test, the examinee is required to assemble the pins, washers, and collars. His score is the number of assemblies completed within the time limit. The first part of the test appears to measure gross movements of arms, hands, and fingers. The second part measures, according to the manual, "what might be called 'tip of the finger' dexterity."

Reliability: When the test is administered only once, the reliability coefficients for each part are in the neighborhood of .70. When the test is administered three times, reliability coefficients are about .85. Because the test has an extremely short working time, it can be repeated without consuming an undue amount of time.

Validity: Four studies of the validity of the test have been published. Drawing on these studies, the manual reports validity coefficients ranging from .07 to .76 based on small groups of persons working at manual jobs. These findings are promising, but they are not sufficient evidence to support generalizations about the test's validity. Because the test is widely used, it seems likely that many data will be published concerning its predictive values in a variety of occupations.

Norms: The manual reports norms based on a variety of groups, such as male and female applicants for manual jobs, or male and female college students. These norms, however, are of little value other than providing information concerning the distribution of scores in more or less heterogeneous groups. Norms based on well-defined groups working in specified occupations in which dexterity is an important factor in success are needed. Nevertheless, Super points out that the counselor who has first-hand experience with reference to manual-type jobs may obtain from the test "clinical insights into the manual dexterities of his clients, which he then subjectively translates into occupational terms."¹⁸

Author: The Purdue Research Foundation, Purdue University.

Publisher: Science Research Associates,
57 West Grand Avenue,
Chicago 10, Illinois.

ARE THERE OTHER SPECIAL APTITUDES?

No discussion of special aptitudes is complete unless it recognizes the existence of aptitudes other than those already dealt with in this chapter. As research becomes more comprehensive, more aptitudes will probably be identified. For example, in an early factor analysis, Thurstone identified eight

¹⁸Super, *op. cit.*, p. 220.

factors. Ten years later, an Army Air Forces study isolated 28 factors. The latter study covered tests used only in the AAF test development program. In other words, this program obviously did not intend to identify or measure all the important aptitudes.

Identifying an aptitude through factor analysis, however, is a far cry from determining the usefulness of that aptitude in studying students. In demonstrating the practical values of special aptitude tests, guidance workers have an enormous job ahead of them. Meanwhile, they should familiarize themselves generally with the beginnings under way, for instance, to determine the applicability of the multi-factor mental ability tests described in Chapter 10 and of the tests available in the areas of musical and artistic talents. The latter tests have not yet been subjected to the extensive research required to win a place as accepted guidance tools. Their use is, therefore, recommended only to those who have extensive counseling and testing experience.

SUGGESTED READINGS

- Bennett, G. K., and Cruikshank, R. M. *A Summary of Clerical Tests*. New York: The Psychological Corporation, 1949.
- Bennett, G. K., and Cruikshank, R. M. *A Summary of Manual and Mechanical Ability Tests*. New York: The Psychological Corporation, 1940.
- Bingham, W. V. *Aptitudes and Aptitude Testing*. New York: Harper and Brothers, 1937. Chapters 1-3, and 10-15.
- Hahn, M. E., and MacLean, M. S. *General Clinical Counseling*. New York: McGraw Hill and Company, 1950. Chapters 7 and 8.
- Super, D. E. *Appraising Vocational Fitness by Means of Psychological Tests*. New York: Harper and Brothers, 1949. Chapters 4, and 8-15.

Guideposts for Individual Analysis

IN THE previous chapters of this book we have described a variety of tools and techniques which can be used to gather information about students. Now we consider the task of bringing together all information collected through various means and of figuring out its significance. In performing this task, guidance workers must look behind the symptoms to find the causes of behavior. They must also assemble the materials that will be most helpful in working out a student's plan of action. In using these materials, counselors must make a series of judgments or diagnoses regarding the student's total adjustment.

WHAT CRITERIA APPLY TO CUMULATIVE RECORDS?

In many schools the data about students are placed on cumulative records. These records vary from a single card containing a minimum of data to a series of cards or folders containing enough basic data for an exhaustive case study. Because a comprehensive discussion of cumulative records is beyond the scope of this book, a list of selected readings dealing with such records is given at the end of this chapter.

Whatever type of cumulative record is used for bringing together data about a student, this record should meet the following criteria:

1. It should be as *simple* as possible.
2. It should be *practical*, requiring the minimum amount of clerical work by teachers or counselors.
3. It should be *flexible* so that it can be easily modified to meet increased needs or changed conditions.
4. It should be *adaptable* to the conditions found in the school.

If a cumulative record plan meets these criteria, it is unlikely that more time will be devoted to routine clerical work in the maintenance of records than is spent in using them for the benefit of individual students. Also, if these criteria are met, cumulative records become a valuable and important aid in reporting, collating, and preserving information about students. The use of such records then truly aids in the diagnosis of students' problems.

WHAT ARE THE GENERAL GUIDEPOSTS FOR DIAGNOSIS?

There are certain general principles which serve as diagnostic guideposts to the counselor. Seven of the most important of these guideposts are presented and discussed next.

1. *Problems Occur with Different Frequencies*

The first guidepost is identified by asking the question: What student problems may be expected to occur most frequently? Just as some forms of illness occur more frequently than others, some forms of student problems occur more frequently than others. In order to know what to look for, then, it

TABLE 24
NUMBER OF COUNSELEES CLASSIFIED BY TYPE OF PRIMARY PROBLEM
AS SEEN BY COUNSELOR

TYPE OF PRIMARY PROBLEM		COUNSELEES	
Number	Description	Number	Percent
1.	Needs information on training for specific vocation or immediate work	77	10.4
2.	Needs help in making an educational plan	47	6.4
3.	Needs help in choosing or confirming an educational plan	42	5.7
4.	Needs change in educational plan	46	6.2
5.	Needs information on entering vocation or securing immediate work	94	12.7
6.	Needs help in making vocational plan	206	27.8
7.	Needs help in choosing or confirming vocational plan	49	6.6
8.	Needs change in vocational plan	96	13.0
9.	Vocational problem complicated by personal problem	31	4.2
10.	Needs help in solving personal problem	52	7.0
Total		740	100.0

is helpful to know what other counselors have found, particularly in general clinical experience.

Problems at a counseling center. Consider the problems presented by persons who came to a free community counseling center. A tabulation of the problems cited by a random sample of 740 of these persons is presented in Table 24.¹ In examining this table, it should be noted, the problems classified were primary or major in nature, as judged by the counselor. Moreover, most persons did not have a single problem; each of these persons usually had several problems which together represented a configuration or pattern.

In Table 24, the first four types of problems concern education and account for 28.7 percent of all the persons in the sample. Vocational problems, numbered five through eight in the table, account for 60.1 percent of the population sampled. The last two types of problems are personal and include 11.2 percent of the population studied. In order of frequency of mention, vocational problems were first, educational problems were second, and personal problems were third.

Types of high-school-student problems. In one high school, twelve teacher-counselors kept a record during one semester of the types of problems which were the major topics of conversation in their interviews with students. These teacher-counselors kept separate tabulations for interviews which were initiated (1) by other faculty members referring the student to the teacher-counselor, (2) by teacher-counselors, or (3) by the students themselves. The findings of this study are summarized in Table 25,² which appears on page 364.

This table reveals a heavy concentration of problems in the "school marks" area. Counselors, however, should not be misled by a table of this type which gives a high ranking to specific problems such as school marks, reading disabilities, or study habits. In such lists, the students usually represent a special group of so-called "problem children," such as school failures; they are not a representative sample of students in general. In

¹Clifford P. Froehlich, "Factors Related to the Effectiveness of Counseling," p. 115. Unpublished doctoral thesis, School of Education, The George Washington University, 1948.

²Clifford P. Froehlich, "Fargo Trains Teachers for Individual Guidance," *The Clearing House*, XVII (January, 1944) 292.

TABLE 25
PRIMARY TOPICS OF COUNSELORS' CONFERENCES WITH STUDENTS

TYPE OF PROBLEM	FACULTY-INITIATED CONFERENCES	COUNSELOR-INITIATED CONFERENCES	STUDENT-INITIATED CONFERENCES	TOTAL CONFERENCES*
School marks	140	614	52	851
Plans for next semester	2	303	79	396
Finances	1	5	3	11
Home problems	1	2	1	5
Vocational plans	8	163	38	227
Health	0	0	0	0
General social adjustment ...	20	7	19	47
Discipline	49	12	4	73
Total	221	1106	196	1610

*Eighty-seven conferences which were a continuation of previous conferences are not included in the first three columns of this table, but are included under "Total Conferences."

the study returns shown in Table 25, for example, it is interesting to note that most of the conferences initiated by faculty and by teacher-counselors were for a "school marks" type of problem. In contrast, most of the conferences initiated by students were to make "plans for next semester."

Problems of typical high-school students. In another research study, almost two-thirds of the school population were interviewed by two clinically-trained counselors who were on the staff of the General College at the University of Minnesota.³

The students were quite typical of high-school seniors in large urban centers. These two counselors, it should be noted, tried to reach as many students as possible instead of waiting for the "problem children" to come to them. Therefore, their findings represent a better cross section of students' problems.

In this study, the counselors found that vocational problems occurred most frequently. Educational problems showed the second highest rate of occurrence. Social or personal adjustment problems were third in order of incidence. Financial problems came next; family adjustment difficulties were fifth and health problems were the least frequent. It is interesting to

³John G. Darley and Cornelia T. Williams, *Report on Problems and Progress of the General College* (Minneapolis: University of Minnesota Mimeograph Department, 1939), pp. 36-41.

observe that the three types of problems found most frequently in this study are the same as those reported in the community counseling center study described earlier. It is quite likely that a similar order of frequency would be found to exist if other *representative* groups of students were studied in a like manner.

Problem incidence as a guide. If counselors know that some problems will occur more frequently than others, they have some idea of what problems to look for in the mass of material that they have collected about students. For example, counselors will tend to look for vocational problems first and health or physical problems last. This process makes for a somewhat greater efficiency in organizing case material.

The counselor's general classification of problems according to type, such as vocational problems, is similar to the doctor's general classification of a health problem according to type, such as respiratory difficulties. A general classification, however, does not tell, and it is not intended to tell, what the specific problem within the problem type may be. It is merely a first guidepost.

Specific problems within main areas. Subsequent guideposts include a knowledge of the more specific problems within each of the possible problem types or areas: (1) vocational, (2) educational, (3) social or personal adjustment, (4) financial, (5) family adjustment, and (6) health.

Within the vocational area, three specific problems are quite common:

1. Discrepancy between the student's ambitions and his abilities
2. Misinformation or inadequate information about job requirements or opportunities
3. Complete indecision (This may be due to the student's consideration of several possible and equally attractive choices, his responses to outside pressures from family members or others, or his complete lack of occupational information.)

Within the educational area, the following specific problems are outstanding:

1. Discrepancy between educational ambitions and abilities (If a student has made a vocational choice out of line with his abilities, he is likely to have made educational plans that are also out of line with his abilities.)
2. Underachievement (This problem occurs about twice as frequently as that of overachievement.)
3. Overachievement
4. Lack of educational motivation
5. Deficient study skills
6. Inefficiency in basic skills, such as reading or arithmetic or spelling

Within the social or personal adjustment area, these specific problems are often found:

1. Feelings of inferiority or lack of self-confidence (A sizable proportion of students have these feelings.)
2. Lack of the basic social skills necessary to enable a student to make good social adjustments (Many students face this type of problem.)
3. Certain personality traits that tend to antagonize a student's contemporaries and that later may antagonize employers or co-workers
4. Apparent need for psychiatric treatment

In regard to the percentage of students who appear to need psychiatric help, the available estimates vary. In the previously-cited study made by staff members of the University of Minnesota, approximately four percent of the students seemed to be in serious need of this kind of medical attention. Because counselors obviously cannot provide psychiatric treatment, they must refer such students to psychiatrists. The counselor who is skilled in diagnostic techniques is able to identify students with problems which require psychiatric assistance earlier in the course of their development than is the counselor who is less skilled in diagnosis.

Within the financial area, these three problems are fairly common:

1. Too much outside work to permit achievement up to capacity
2. Restrictions on educational-vocational planning because of inadequate financial resources

3. Educational-vocational plans dependent upon receiving financial aid (This problem is less severe than that mentioned second.)

Within the area of family relationships, the following problems are common:

1. Conflicts over educational and vocational plans
2. Overdependence of girls on their families
3. Difficulties of boys in establishing independence of their families
4. Conflicts with brothers and sisters
5. Personality clashes between the adult members and the younger members of the family (These clashes are frequently caused by differences in ages and in habits of living.)

Finally, within the area of physical or health problems, the following specifics are found:

1. Frequent absence from school because of sickness
2. Educational or vocational limitations imposed by physical disabilities of a permanent or temporary nature
3. Worry about health, due to real or imagined physical conditions (This problem is found more frequently among girls than boys.)
4. Physiological changes and accompanying worries resulting from sexual development and misinformation regarding sex problems

The foregoing classification of problems according to given types has been sharply criticized by Bordin. He pointed out that "it represents an attempt to describe the individual in terms of his adjustment to the demands of his environment. It places its emphasis upon the aspects of his social environment with which he appears to be unable to cope to his satisfaction or to the satisfaction of society (which assumes eventual dissatisfaction for the individual). This type of description might be termed a sociological description of the individual to distinguish it from a psychological description of the individual which starts at the individual, describing the organization of his behavioral characteristics and predicting what his reactions will be to his social environment."⁴

⁴Edward S. Bordin, "Diagnosis in Counseling and Psychotherapy," *Educational and Psychological Measurement*, VI (Summer, 1946), 173-174.

Bordin's system of classifying problems. Bordin also criticized the classification because he felt that (1) its use did not enable the counselor to understand the counselee's problem more clearly, (2) its categories overlapped, and (3) its categories did not assist the counselor in his choice of methods for helping the counselee. To meet these shortcomings, Bordin proposed a five-fold classification system which he called "a suggested set of diagnostic constructs." In Bordin's words, these constructs are:

1. *Dependence.* This concept is common currency in child and adolescent psychology where it is usually discussed under the rubric "psychological weaning." The client comes to the counselor for help because he has not learned to solve his own problems. The client is used to playing a passive role. . . . Usually he has come to the counselor because someone has taken the responsibility to suggest it. The counselor will find that this type of client resists accepting responsibility. He will be anxious to continue his contact with the counselor. If given the opportunity, he will wear a path to the counselor's door, coming in for help with every decision that faces him. . . . The unwary counselor will feel that he has established a good relationship (*rapport*) with this client, but it would appear that he is fostering the further development of an unsatisfactory behavior pattern (from either the social or individual viewpoint). The treatment of individuals presenting this kind of problem would appear to include aid in insight and acceptance of the fact that they do feel inadequate to cope actively and responsibly with their everyday problems and aid in obtaining the experiences that will enable them to work out their own problems. . . .

2. *Lack of Information.* Many individuals face situations for which their experience has not prepared them. The individuals who would fall in the lack-of-information category are individuals who are used to accepting the responsibility for making their own decisions, but who face a decision involving information or special skills out of the realm of their experience. . . . These individuals lack the opportunities to compare themselves with representative groups necessary to accurate judgments about their learning abilities, relative weaknesses or strengths in their background of knowledge. They lack sufficient information about the occupational world to set their sights realistically. Sometimes they lack knowledge of appropriate social behavior causing them to feel insecure and ineffectual in attempting to achieve social goals. . . . The treatment

of such individuals would appear to be quite direct. They should be given information, referred to books or other individuals, and so on. Where the individual is seeking to avoid responsibility, care must be exercised to avoid giving him the information in such a manner as to foster his potential dependence.

3. *Self-Conflict*. The fact that there appear to be sharply differentiated organizations of individuals' behaviors toward themselves as stimulus objects has been receiving renewed and extended attention in the recent psychological literature. . . . From clinical observation it appears that many of the obstacles in the individual's ability to cope with his problems arise from the conflicts between the response functions associated with two or more of his self-concepts or between a self-concept and some other stimulus function. . . . In addition to such familiar instances of conflict between a self-concept and the ability to behave in a manner consistent with that self, there are instances where two self-concepts come into conflict.

The nondirective treatment process described by Rogers appears to apply most completely and most directly to this type of psychological problem. It can be assumed that individuals presenting problems of self-conflict must be aided to recognize and accept their conflicting feelings before they will be able to arrive at the positive decisions involved in resolving the conflict.

4. *Choice Anxiety*. . . . when the concepts were being formulated, large numbers of students in colleges and universities were grappling with the problem of their relationship to the national emergency. . . . These individuals were faced with alternatives, all of which were unpleasant in that all would involve a disruption of their life plans. The student talking to the counselor was fully informed on all of the alternatives open to him. He appeared to be coming to the counselor in the hope that he would be able to find some other alternative that would represent a way out without unpleasant consequences. These students were under considerable tension, indecisive, and tending toward physical exhaustion. . . .

It can be expected that problems of this type will increase in incidence during any period of social upheaval and rapid change. . . .

The treatment that appears to be indicated for individuals with this type of problem is to enable them to face and accept the fact that they are "in for it." It is here assumed that once the individual has accepted the fact that he is in a situation from which there is no escape without unpleasantness, the psychasthenic symptoms will disappear and the individual will be able to make a decision. It is further assumed that many such individuals will be able to accept

this statement of their problem when it is given to them directly after some "talking out" process. . . .

5. *No Problem.* To keep his perspective, the clinician should recognize that, if he works in a widely publicized and widely accepted agency to which individuals have easy access, a considerable proportion of the individuals who seek him out will not present definitely classifiable problems. For the most part they will be individuals who come to the counselor in the same spirit in which we might visit our doctor once a year for a physical check-up. In other words, they are playing safe.⁵

Williamson has pointed out that Bordin "tends to identify diagnosis with emotional maladjustment."⁶ The authors recognize many of the advantages Bordin claims for his system; but they believe that it is still useful to consider the situations causing student maladjustment. In other words, knowledge of the kinds and frequencies of student problems is a valuable diagnostic guidepost.

2. *Students Have Unique Patterns of Problems*

A second guidepost to the counselor is the specific constellation or pattern of problems that a particular student has. Each student's pattern is unique. He may have, for example, the least frequent specific type of vocational problem, together with a very unusual health problem and the most frequently occurring educational problem. His pattern of problems differs from that of any other student, whose problems conform to another rank order in terms of the general frequencies of all students' difficulties.

With further reference to problem patterns, guidance workers should recognize that the typical student usually has more than one problem. Several studies have revealed that, on the average, each student presents from three to five different specific difficulties or problems, for which either a small amount or a great amount of help is necessary.

These first two guideposts—the expected order of frequency of problems among students in general and the unique pattern

⁵*Ibid.*, pp. 176-182.

⁶By permission from *Counseling Adolescents* by E. G. Williamson. Copyright. 1950. McGraw-Hill Book Company, Inc.

of problems of each student—assist the counselor in knowing what to look for in studying students.

3. *Problems Vary in Intensity*

The third guidepost points out that students' problems vary in level of intensity or severity. At first, it is best to consider problems as being on only two levels of severity—major problems and minor problems. Although there is no hard-and-fast line between these two levels, in general a problem may be appropriately classified as a *major* problem (a) if it has existed for a long period of time, (b) if it can be solved only by drastic changes in the student or in the student's environmental situation, or (c) if it results in unsatisfactory behavior which clearly distinguishes the student from his contemporaries.

As one example of a severe problem, consider a reading disability of long standing; this disability will be harder to correct than one that is of recent origin. Another serious problem is an insurmountable financial difficulty that prevents a capable student from going on to professional training. Still another type of serious problem is exemplified by a student whose poor social adjustment has caused him to be almost completely isolated from his fellow students. This student is in more severe straits than is one whose behavior is less noticeably different from his fellows.

4. *Counselors Cannot Help All Students*

Anyone who has spent many years in dealing with human difficulties tends to become "case hardened." In contrast, a beginning counselor approaches the student and his difficulties enthusiastically and hopefully. He usually has great confidence that his newly-learned techniques will solve the difficulties of every student with whom he works.

The new counselor desirably approaches his job with optimism. After some period of counseling experience, however, he will become understandably less hopeful of being of assistance to all students who come to him for help. Even the experienced counselor is not equipped to deal with certain problems, particularly those involving psychiatric difficulties. He can do little or nothing for a student who is unwilling to

take the necessary steps to solve his own problems, or who has unfavorable environmental factors that are hard to change.

As the counselor encounters such students, he becomes more experienced and judicious; he learns not to build up exaggerated hopes in his counselees. He also learns to apply his energies more efficiently to the potentially hopeful cases. He becomes more astute in identifying students whose problems should be handled by other specialists. In these ways he saves himself some of the heartaches which inevitably come with recognition of the inhumanity of man to man. This point is stressed because many beginning counselors become discouraged and frustrated by their inability to succeed with every student.

Generally speaking, counselors find that they have the least success in dealing with family or financial problems, because frequently these problems are created or affected by factors beyond control of the student. They have most success with a student's educational and vocational problems because these problems are influenced by factors over which the student himself has some measure of control. Between these extremes lie the social or personal adjustment problems of a student.

5. Diagnosis Is Not Treatment

The fifth guidepost is directly related to the outcomes of counseling. Just because a counselor makes a correct and appropriate diagnosis of a student's difficulties, he should not expect that he can cure or solve all those difficulties. To cite an analogy, a doctor may make a perfect diagnosis of a patient's incurable illness, but he can only prescribe a course of treatment that alleviates the symptoms of the disease. A student's problem may become incurable because the problem was not diagnosed early enough; this implies the importance not only of early diagnosis but also of preventive guidance work. The student's problem may be incurable because it is due to conditions over which he, his family, or a counselor have little or no control. An illustration is the high-ability student whose financial resources absolutely prevent him from continuing his formal education. The diagnosis of his problem is easy, but helping him overcome it may be very difficult if not impossible.

Nevertheless, whether students' problems are solvable or not, the counselor will be able effectively to help students only if he correctly diagnoses their problems. The counselor is obligated to do this, regardless of his chances of helping students and regardless of his prognosis of their futures.

6. *Symptoms Must be Distinguished from Causes*

The sixth guidepost emphasizes that, in studying the mass of material collected for each student, the counselor must distinguish between a cause and a symptom. To give a very extreme example: If a patient has a fever of 103° , it might be possible to reduce the fever by placing ice packs on his body. When the ice packs are removed, however, the patient's fever of 103° returns. The condition which brought about the fever remained untouched by the ice packs. The only thing that was done was to treat the symptom rather than the basic condition. The wise physician prescribes medicine and other treatment designed to reduce a patient's fever. At the same time, he recognizes that such a high fever is a symptom, not a cause. Accordingly, he endeavors to find out what disease is causing the fever and then prescribes a treatment aimed toward curing the disease.

In the case of the student who is underachieving, the disparity between his school marks and his measured aptitude is truly a symptom. Teachers can treat this symptom by scolding the student, by exhorting him to do better work, by giving him failing grades, or by sending him to the principal. If teachers do any of these things, the student may promise to work harder and may carry out his promise, but the chances are slim that his marks will improve. He will be able to raise his academic standing only if the causes of his symptom of underachievement are discovered and only if he is able to remove these causes.

Example of an inappropriate choice. More specifically, consider the student who has made an inappropriate vocational choice. He wants to become an engineer, but he has received mathematics marks which have always been far below average and science marks which have been equally low. Also he has very little occupational information about what engineers do.

Is this student's incorrect vocational choice his basic problem, or is it a symptom of another kind of problem?

Assume that this student chose engineering because of family insistence. If the counselor does not know this fact, or if he ignores it, he might try to persuade the student that he should not become an engineer. Also, he might point out that the student will almost surely fail if he goes on with engineering training. In other words, if the counselor does not find out that the family is holding this student to an incorrect choice, the counselor may deal with a symptom of that student's problem rather than with its basic cause.

The counselor, however, may discover that the student's choice is symptomatic of family domination in regard to vocational planning. If so, the counselor, with the student's consent, can consult with the family in an effort to correct the student's difficulty at its source. This student's problem is one among many appearing in the previous listing of frequently-occurring problems. Study of this listing will indicate other examples of the possible confusion between symptoms and causes.

Tracing the symptom to its probable cause. In studying each student, counselors and teachers must always look for a basic and fitting explanation of that student's difficulties. They must examine every problem confronted by him; they must trace that problem back to its origins. They must see that problem as displayed in different situations. They must relate it to other problem areas. Although the task may seem difficult and complex, the counselor need not become discouraged. Knowledge of the nature of the task simply serves as a guidepost to help direct the counselor's thinking. Stated another way, this guidepost helps point out answers to questions like these: Is the student's difficulty a cause in and of itself, or is it a symptom of other difficulties? If the latter, what are these other difficulties and how can they be attacked?

Even the most skillful counselor cannot say absolutely that a given set of conditions is beyond all doubt the source of a student's problem. He may only say that the conditions *probably produced* or *were likely to have produced* this problem. The key words here, of course, are *probably* and *likely*.

In the example of incorrect vocational choice just cited, the counselor might appropriately make the following statement: "This student has made an incorrect vocational choice. The *chances are* that he has done so because his parents insist upon this particular choice. Moreover, the *chances are* that they insist on such a choice because they do not realize the demands of the occupation or the strengths and weaknesses of their child as related to that occupation." In this statement, notice that the phrase, "the chances are," is the counselor's way of stating his best estimate of the reasons for the student's problem.

In the counselor's efforts to distinguish between symptoms and causes, he should always keep in mind that many factors operate to determine the course of human behavior. For this reason, he discusses the *chances* that a factor is operating to produce a symptom or problem. He never states with certainty that this particular factor is causing that particular problem.

7. *Problems May Be Stated Inaccurately*

A final guidepost of importance in identifying student problems is simply this: The student may not diagnose himself accurately. A student may remark that he does not believe he has a problem. Or he may state a problem which later turns out to be the least important aspect of his difficulties. In such a case, the counselor should keep in mind that the student and the counselor may have different viewpoints. A counselor, for example, from the material in front of him, may come to feel that a student has made an incorrect vocational choice. The student, however, may believe that his choice is correct. He may feel that his main problem, and the one for which he seeks help, is a problem which can be solved through financial assistance alone.

It should be noted that students often come to a counselor with problems that appear to be superficial. The "sympathetic" counselor may tend to accept all students' statements of their problems at face value. If the counselor does so, he becomes just an interested listener and as such fails to carry out his professional diagnostic function. When working with such students, the competent counselor does much more than "just listen." He recognizes that he has tools, techniques, information,

and skills which the student does not have, and he makes effective use of them. Thus, the skillful counselor employs his tools and techniques adroitly and interprets his information wisely, realizing all the while that he and the student may have different views of the latter's problem.

Recognizing differing points of view. Although the counselor and the student may have varying points of view in the counseling interview, the counselor never fails to take account of what the student feels to be his difficulty. In fact, the competent counselor nearly always starts his counseling by talking with the student about the latter's stated problem. But he does not take the student's statement of the problem as an accurate or complete diagnosis nor does he confine discussion to that problem alone.

Consider a student who in an interview with a counselor complains about a certain teacher, asks about his program plans for the coming year, or talks about his trouble with a certain subject. During the interview the counselor may find that the student has a personal problem which he either hesitates to discuss or of which he is unaware. The counselor tries to get the student to talk freely and frankly to get at the root of his problem or to discover exactly what his problem is. The competent counselor does not focus all his attention on what the student wants to discuss in the interview. Rather, he tries to decide whether the student's stated problem is the student's real problem. He then guides the discussion toward the identification and analysis of the real problem.

These seven guideposts are important general principles in diagnosis. The next chapter considers the application of these principles to the diagnosis of specific problems.

SUGGESTED READINGS ON CUMULATIVE RECORDS

Allen, Wendell C. *Cumulative Pupil Records: A Plan for Staff Study and Improvement of Pupil Records in Secondary Schools*. New York: Bureau of Publications, Teachers College, Columbia University, 1949.

Handbook of Cumulative Records. A Report of the National Committee on Cumulative Records Bulletin 1944, Number 5. Washington: U.S. Office of Education.

- Strang, Ruth. *Counseling Technics in College and Secondary School*. New York: Harper and Brothers, 1949. Pp. 180-205.
- Traxler, Arthur E. *How to Use Cumulative Records*. Chicago: Science Research Associates, 1947.
- Traxler, Arthur E. *Techniques of Guidance*. New York: Harper and Brothers, 1945. Pp. 202-234.

SUGGESTED READINGS ON DIAGNOSIS

- Berdie, Ralph F. "Student Personnel Work—IV. Diagnostic Techniques," *Encyclopedia of Educational Research*. Edited by Walter S. Monroe. New York: Macmillan Company, 1950. Pp. 1305-1310.
- Froehlich, Clifford P. *Guidance Services in Smaller Schools*. New York: McGraw-Hill Book Co., 1950. Pp. 151-200.
- Robinson, Francis P. *Principles and Procedures in Student Counseling*. New York: Harper and Brothers, 1950. Pp. 163-177.
- Williamson, E. G. *Counseling Adolescents*. New York: McGraw-Hill Book Co., 1950. Pp. 178-208.
- Williamson, E. G., and Darley, J. G. *Student Personnel Work*. New York: McGraw-Hill Book Co., 1937.

Identifying Student Problems

DIAGNOSING a student's problems is at best a complicated and inexact procedure. There is no scientifically precise method for bringing together and evaluating all of the data about that student in order to arrive at a diagnosis. The final evaluation of that diagnosis rests with the student because he alone has the responsibility for taking action in line with it.

In making evaluations of their diagnoses, counselors should be guided by the results of investigations of human behavior as well as by the suggested tools and techniques which have been described in this book. Drawing upon these sources, their diagnoses must depend upon a careful weighing of all the known factors and the relationships among them. This is essential in order to arrive at conclusions which seek to assess a student's plans and adjustment status. After making a diagnosis, the counselor must present and interpret these data to the student in such a way as to make it clear that the presentation represents the counselor's best clinical judgment—not an infallible conclusion.

Many persons are extremely critical of diagnoses based on clinical judgments. And they have reason to be! All the measures needed for diagnosis are not now available. In the field of test interpretation, for example, Super has stated that "as psychometric methods improve, more factors will be more adequately taken into consideration and judgments made subjectively by the counselor will be made objectively by psychometrics."¹ But he qualifies this statement by declaring "that

¹Donald J. Super, *Appraising Vocational Fitness by Means of Psychological Tests* (New York: Harper and Brothers, 1949), pp. 536-537.

science must make a good deal of progress before all significant factors and relationships can be quantitatively measured and expressed."²

The clinical judgments of counselors are neither definitive nor absolute. But the experience of many counselors indicates that such judgments can greatly assist students in solving their problems. Until more objective methods for making diagnoses are available, counselors and teachers must employ some subjective methods in making decisions regarding a student's problems. The specifics of these methods are described in this chapter.

HOW CAN VOCATIONAL PROBLEMS BE IDENTIFIED?

Regarding vocational adjustment, the counselor and the student have to make one of three decisions: (a) the student's present vocational choice is appropriate, (b) his choice is inappropriate, or (c) he has made no choice.

The Nature of and Reasons for Inappropriate Choices

The counselor and the student may decide that the latter's vocational choice is probably inappropriate after considering the following factors:

1. The student's choice requires much more or much less general scholastic ability than he possesses.
2. It requires special aptitudes which he does not have in sufficient amounts.
3. It requires a different pattern of occupational interests and personality than he shows.
4. It requires an amount of training which he cannot obtain.

Decisions regarding the first three of these factors must be based upon knowledge of the student's strong and weak points as well as upon knowledge of requirements of the job or job field under consideration. Decisions about the fourth factor involve knowledge of the student's family background and finances and of the educational opportunities available to him.

If the student's vocational choice appears to be unsuitable according to the factors just cited, steps should be taken to

²*Ibid.*, p. 537.

determine why it is so. His choice may be inappropriate because of these reasons:

1. The family insists that the student take up a particular line of work.
2. The student (or his family) has a misunderstanding about the duties and qualifications of the occupation he has chosen.
3. The student (or his family) is misinformed about the salaries or wages, job opportunities, and security associated with the occupation.
4. The student (or his family) has a romantic or idealistic point of view about the occupation.
5. Well-meaning friends have suggested that the student would be a success in the occupation.

Notice that all these reasons grow out of a failure to understand the student's own strong and weak points in relation to job demands. This failure may be due to the incorrect and perhaps unspoken assumption by the student (a) that he can become any kind of worker that he chooses, and (b) that therefore he needs only to select the field where incomes are high, openings are frequent, and security is great. This assumption is incorrect; all students, for example, cannot master higher mathematics, or run the hundred-yard dash in 9.4 seconds, or learn to play a musical instrument like a virtuoso.

If the student displays no vocational choice, this may be due to one or more of these facts:

1. He is not psychologically ready, in terms of maturity or need, to make a choice.
2. He does not have enough information about himself and about jobs to be able to make a choice.
3. He cannot make up his mind between two or more possible choices.

Whether a student has made an *inappropriate choice* or an *appropriate choice*, he will show some degree of certainty in his decision. With reference to a specific choice, this degree may range all the way from complete uncertainty to complete certainty.

The Nature of Occupational Ability Profiles

How then can the counselor judge the appropriateness of a student's claimed choice, or how can he help that student to arrive at an appropriate choice? As a beginning toward answering this question, psychologists have developed what they call the "occupational ability profile." This development is a basic guidepost in vocational guidance work. Its logic in outline form is as follows:

1. There are about 40,000 or more separate occupational titles or labels in the world of work.
2. These titles can be grouped into broad *families* of occupations, wherein each family requires different amounts and kinds of various human characteristics for successful job competition.
3. *Some* of these human characteristics can be measured by available test techniques as these characteristics are found among successful workers in the family of occupations.
4. Of the human characteristics which can be measured, some mature in the individual before he has had job experience. These are general ability, special aptitudes, and interest types.
5. The counselor can measure or estimate the amount of a matured characteristic possessed by the student and can then compare this amount with the amounts possessed by persons employed in several families of occupations.
6. The counselor can next help the student to evaluate himself in comparison with other students or with employed workers. During this evaluation the student may make an occupational choice in which his chances of competing successfully and of finding satisfaction will be the greatest.

This, of course, is an oversimplified statement of the basic idea of the "occupational ability profile"; actually this idea is not as easy to comprehend as it may appear to be at first. Nevertheless, the idea helps to give direction to the analysis of students' vocational plans and to the study of jobs. In considering this matter, notice an important point: When a counselor seeks occupational information in order to use the "occupational profile" idea, he primarily seeks information about the human

abilities, aptitudes, and interests demanded by the job. He uses this information in connection with facts about number of openings, beginning salaries and wages, and other aspects of the supply of and the demand for workers.

The occupational profile can be clarified through an example. First, consider three broad families of jobs open to high school students: office clerical jobs, semi-skilled mechanical jobs, and retail sales jobs. Second, consider only a few abilities or characteristics: general scholastic ability, clerical aptitude, background in English, "social intelligence," and occupational interest type. And third, consider each of the aforesaid abilities or characteristics as ratable on a five-point scale: "very much," "much," "average," "little," and "very little." How much of each ability theoretically required for the three job families is indicated in Table 26.

TABLE 26
OCCUPATIONAL ABILITY PROFILES OF THREE JOB FAMILIES OPEN TO
HIGH-SCHOOL STUDENTS

ABILITY OR CHARACTERISTIC	JOB FAMILY		
	Clerical	Semi-Skilled	Retail Sales
General scholastic ability	much	little	little
Clerical aptitude	very much	very little	average or little
Background in English	much	little	average
Social intelligence	much	little	much or very much
Occupational interest type	business detail	sub professional	business contact

Another example of the occupational ability profile is portrayed in Table 27. Because this table deals with the college-bound group of students, it considers such factors as general scholastic ability, mathematics aptitude, social science back-

TABLE 27
ABILITY PROFILES OF THREE FAMILIES OF PROFESSIONAL CURRICULUMS

ABILITY OR CHARACTERISTIC	CURRICULUM		
	Engineering	Social Service	Business
General scholastic ability	very much	very much	very much
Mathematics aptitude	very much	average	much
Social science background	average	very much	much
Economic conservatism	average	little	much
English background	average	much	much
Interest type	technological	social science	business detail or verbal

ground, economic conservatism, English background, and interest type. Instead of dealing with families of *occupations* as does the previous table, Table 27 deals with families of *professional curriculums*: specifically, all engineering curriculums, all social service curriculums (including teacher training), and all business curriculums (including law school).

In the examples just given, the average point of the five-point scale ranging from "very much" to "very little" may be taken as "the average of graduating high-school seniors in urban areas." In Table 26, notice that a less-than-average amount of some abilities is found among successful workers in certain job families. This fact is important to keep in mind in interpreting the below-average test scores made by some students.

With further reference to Table 27, for the college bound group, it can be seen that promising candidates for any one of the three curricular families are much alike in terms of the amount of general scholastic ability which they must possess. But these candidates are somewhat different in other requisite abilities. This observation points out the importance of careful individual studies of so-called "high-ability" students. These students will probably know that they are "college caliber"; even so, they must decide what curriculum or college can best help them to move toward the appropriate broad family of occupations for which college training is essential.

In careful research studies of occupational profiles, means and standard deviations of test scores, calculated from samples of successful workers, are substituted for descriptive terms, such as "very much," "much," "average," "little," and "very little." For illustrative purposes, however, these terms will serve the purpose. Such terms are used here for three main reasons: First, because job or college standards vary from one locality to another, Second, because numerical values should be assigned on the basis of local research. And third, because requirements for many jobs have never been objectively determined.

Aids in Preparing Occupational Profiles

An interesting and practical approach to the *estimation* or *judgment* of job needs is the *Minnesota Occupational Rating*

*Scales.*³ The authors of this scale designated six types of ability: academic, mechanical, social, clerical, musical, and artistic. Within each ability type they set up four levels, A, B, C, and D, covering stated percentages of people in the general population. They then went to experts in the fields of production management, industrial psychology, and personnel work to get their ratings of the level of each type of ability required for success in over four hundred different jobs. As a final step, they grouped all the occupational titles into "families" of jobs, which were judged to require the same or similar patterns or levels of the six specified types of ability.

The validation of the *Minnesota Occupational Rating Scales* is based upon *expert ratings* of levels of ability required for job success rather than upon statistical predictions. Therefore, these scales are primarily useful in general guidance work rather than in specific prediction of success in a particular industry, employing company, or training program.

Another tool which is of considerable use to guidance workers is the *Dictionary of Occupational Titles, Volume I: Definition of Titles*.⁴ This volume defines and describes the duties for more than 22,000 jobs that are known by more than 40,000 job titles. This dictionary can be employed to describe the 430 jobs listed in the *Minnesota Occupational Rating Scales* and many more jobs not appearing in these scales.

Another source of information concerning occupational aptitude requirements is *Part IV* of the *Dictionary of Occupational Titles*.⁵ This publication outlines the minimum qualifications for beginning workers in a wide variety of jobs. Since beginning workers have no work experience record from which their chances for success on the job can be estimated, this source book discusses factors other than prior occupational experience. It presents tentative lists of key factors under the headings of (a) personal traits, (b) leisure-time activities, (c) casual work experience, and (d) military and civilian training. With further

³D. G. Paterson, C. d'A. Gerken, and M. E. Hahn, *Minnesota Occupational Rating Scales* (Chicago: Science Research Associates, 1941), p. 133.

⁴U.S. Employment Service, *Dictionary of Occupational Titles*, Vol. I: *Definition of Titles* (Washington: Government Printing Office, 1949).

⁵U.S. Employment Service, *Dictionary of Occupational Titles*, Part IV: *Entry Occupational Classification* (Washington: Government Printing Office, 1944).

reference to these lists, the dictionary's authors, with commendable caution, state: "These lists are intended to be suggestive, not definitive. Much remains to be done in validating many of the classification factors listed, yet a combination of such factors can outline a pattern which is definitely indicative of potential occupational ability and which can be identified with one or more of the entry classifications (jobs) suggested."⁶

The counselor should employ procedures to identify vocational problems *before* he attempts to do anything more about these problems. In the identification process, he first reviews the information available about a given student. Then he talks things over with the student in an interview; thus, both he and the student get a clearer picture of the latter's problem and attitude toward it. As yet, it will be noted, the counselor *has* not tried in any way to help the student correct an inappropriate choice, confirm an appropriate choice, or even make a choice. Because the techniques of aiding the student in making choices are counseling procedures,⁷ they are not considered in this book on methods of individual analysis.

The Role of Occupational Profiles

In assisting students with vocational problems, the occupational profile idea has two outstanding advantages. First, the profile idea helps the student to deal with a *family* or *families* of occupations instead of with the specific occupational labels he has selected. It is basically a much sounder and more functional approach to the student's vocational problems. By referring to the family of occupations which seems most appropriate, the counselor can help the student to select several specific jobs for consideration.

Second, the profile idea aids the student in the earlier school years to gain information about himself and about the world of work. In the junior high school, for example, the counselor can begin to spot some of the broad characteristics of the student's abilities, aptitudes, and interests which are

⁶*Ibid.*, p. 158.

⁷The reader who is interested in suggestions on counseling procedures may wish to consult *Counseling Adolescents*, by Shirley A. Hamrin and Blanche B. Paulson. This volume is a companion to the present book in the *Professional Guidance Series*.

of special significance in choosing job families. As a corollary to this second advantage, the counselor can assist the student, at various stages of his development, to relate his claimed occupational choices to families of occupations. This can be done through group guidance methods. The occupations class, for instance, might study families of occupations. Then the counselor might help each student to select for further study a particular occupational family, specifically that family which individual diagnosis indicates is likely to be appropriate for him.

Valuable as the occupational profile idea is, one limiting fact must be mentioned. This deals with the extent to which the characteristics of successful people in a given occupational family differ from the average amounts of such characteristics possessed by the general working population. In many routine, repetitive, relatively-unskilled occupations, workers have characteristics which probably do not differ to any great extent from those possessed by the average of the general working population. Moreover, because such occupations demand no distinguishing or outstanding characteristics, it is difficult if not impossible to group these occupations into occupational families. For this reason, when a student shows a pattern of characteristics which is closely similar to that displayed by the general population average, he may obtain comparatively little benefit from the occupational profile idea.

The counselor's role in identifying the appropriateness of a student's vocational choice can be summed up thus: Is the student's claimed choice within the family of occupations where his particular ability, aptitude, and interest pattern indicate he can successfully compete? If so, the student's choice is appropriate. If not, it is inappropriate. Then the counselor and the student together must seek out and evaluate the factors which point to the inappropriateness of the student's choice.

WHAT ARE EDUCATIONAL PROBLEMS?

In this problem area, the counselor and the student have one dominant question to answer. Is the student working up to his capacity? If not, what educational difficulties exist? At times, after investigation, a student's specific educational problem turns out to be mainly a symptom of another problem. If so,

the counselor must track down the latter problem to its ultimate source, for this process is basic to diagnosis of the student's educational problem.

Comparing Educational Achievement and Scholastic Ability

In deciding whether the student is working up to capacity, the counselor must know three sets of facts: (1) the student's capacity as measured by good tests of general scholastic ability; (2) his work or output as measured by marks and, where possible, by standard achievement tests; and (3) the established relationship between ability and achievement for the school population of which this student is a member. This last fact is derived by computing the coefficient of correlation or by preparing a scatter-diagram, techniques which were illustrated in earlier chapters.

In the process of considering a student's educational future, the counselor and student will look closely at the student's marks in relation to his level of ability. The student's marks may be about at the level which he is capable of reaching. This level, however, may be below the school standard, the passing level. Then the student's failure indicates that his low marks are probably not his own fault. Rather, his failure implies that the curriculum he is taking is not appropriate to his ability level. In such a case, the counselor may be called upon to help this student evaluate his chances for success in another curriculum.

If the student seems to be an overachiever, the counselor may wisely study the scatter-diagram portraying the average of that student's marks and his score on a standardized test of scholastic ability. In addition, the counselor may profitably examine the scatter-diagram showing that student's score on a standardized achievement test and his score on a scholastic ability test. Thereby, the counselor may find that the student's tested achievement is more in line with his ability than are his marks. If the student seems to be an underachiever according to his teachers' marks and his ability scores, the counselor may employ the two scatter-diagrams again. Thereby he may discover that in academic work the student is doing about as well as can be expected of him.

Standardized tests may reveal that a student's scholastic ability is definitely above the level of his measured achievement as well as above the level of his marks. In this case, the counselor and the student must undertake the search for the specific reasons for the student's underachievement. During this search, the counselor may find that the student is spending an excessive amount of time in outside work for money. This may lead directly to an investigation of a financial type of problem. Or, the counselor may discover that the student lacks the basic study skills to learn and to retain what is taught. The student may be spending inappropriate amounts of time on study; he may be unable to use his textbooks effectively; or he may be unable to use library facilities to locate necessary information.

Improving Study Methods, Time Use, and Learning Skills

Because teachers are primarily subject-matter specialists, they should be able to identify students who are using incorrect approaches to the study of their subjects. They should be able to help students develop more efficient study methods.

To aid good as well as poor students, counselors can employ inexpensive study manuals or other aids that are available. These aids are guides to identifying, analyzing, and treating study weaknesses. One such guide, written for students, is *Study Your Way Through School*.⁸ This pamphlet contains a selected list of readings which are of interest to teachers and counselors as well as students.

In some cases, the cause of a student's underachievement may be traced to his inability to budget time. He may lack either the skill or the motivation to distribute the 168 hours in each week so that each hour is spent as wisely as possible. In working to solve his problem, this student can participate in the diagnostic process by keeping a "log book" of his time for a few weeks. By examining this log, he can discover how wisely or wastefully he used his time. If this record reveals that he is devoting insufficient time to school tasks or that he has failed to account for sizable blocks of his time, it may point to an important cause of his educational problem.

⁸C. d'A. Gerken, *Study Your Way Through School* (Chicago: Science Research Associates, 1947).

In other cases of discrepancies between present performance and measured ability and achievement, the guidance worker may look for educational disabilities, such as low reading speed and comprehension, poor arithmetic skills, or weaknesses in English and language skills. If a student's reading skills are deficient, he may well use an inexpensive manual or other aids to identify and correct this particular problem. One of these aids is *Streamline Your Reading*,⁹ which contains a list of other pamphlets on this topic.

In forming diagnostic judgments, the counselor should inspect the student's cumulative record. There he will look at the student's scores and ranks on scholastic ability and achievement tests. There he also will examine the student's school marks. Through this process the counselor endeavors to determine the student's continuing strong and weak points. He may find that a given student has consistently made poor marks in one subject-matter area, with good or high marks in another area. Poor marks may indicate a special handicap that will unfavorably color all of the student's subsequent educational experiences.

If a student's vocational choice is inappropriate, his future educational plans are often inappropriate. Thus by diagnosing a student's vocational problem, the counselor may also be led to a diagnosis of his educational difficulty.

Increasing Concern for Student Motivation

There are two other specific educational problems that should be mentioned here. The first is concerned with motivation. Many times teachers feel that certain students "just won't work." They direct this complaint more frequently toward boys than toward girls; they assign boys, on the average, lower marks than they give girls, even though studies show that both sexes are about the same in basic ability. If boys really do less well in academic work than girls do, the problem is essentially one of inappropriate or inadequate motivation. This problem is relatively easy to identify but it is extremely difficult to solve.

⁹Paul Witty, *Streamline Your Reading* (Chicago: Science Research Associates, 1949).

Psychologists know relatively little about motivation among human beings in either the theoretical or the practical sense. Even so, the alert counselor can readily see certain elements in the high-school situation that do not produce motivation. He knows, for instance, that going to school is compulsory, and that outside compulsion usually does not strengthen motivation. Going to school, moreover, involves some classroom activities that have little or no intrinsic interest or apparent value to the student. Because of this situation, students may find it difficult to keep their attention on the matters before them. Poor motivation causes poor attention.

Going to school, furthermore, usually involves no freedom of choice on the part of a student, a situation which may limit his motivation. Going to school as an activity competes with a host of other activities in which the student may want to participate. These more interesting "distractions" or "by-paths" tend to cut down on motivation to study. All these facts point out that the school situation itself is often the source of poor motivation; therefore, a student should not be condemned too severely if he lacks the study motives which teachers want him to have.

Better Planning of Students' Programs

Another educational problem involves the planning of student programs including extracurricular activities. Usually this problem is solved the easy way by requiring all students to take specified subjects at specified times. Students, for example, must take certain traditional academic subjects; they are allowed to make a limited choice among a few nonacademic electives. Admittedly, such high-school practices are determined or influenced by state departments of education, accrediting agencies, colleges and universities through their admission requirements, and local traditions and pressures. Yet such practices may well be the causes of educational difficulties. Nevertheless, many of these difficulties can be prevented if data about the individual student are used in his program planning, in his selection of appropriate educational experiences, and in the creation of new informal or formal experiences to meet his needs. The better the program planning for the individual stu-

dent, regardless of his grade and age, the more effective his schooling.

The two problems just cited—motivation and selection of school experiences—are linked together. The source of these two problems lies mainly in the school program itself. Their solutions, therefore, must depend upon corrections at the source. All too many students show problems of poor motivation and unreasoned or inappropriate program choices that are due to the rigidity of school offerings.

Referring again to the scatter-diagram, the counselor or teacher may form a relatively sound judgment about whether a student is working to capacity. Through this diagram, also, the counselor may identify other students who have specific educational problems of a similar type. In dealing with such students, the counselor should keep in mind that poor marks are primarily symptoms of educational underachievement. The causes of these symptoms may be traced to such factors as health, financial, personal, or family problems. In addition, the counselor should remember that a student may have an educational problem even though his marks are in line with his indicated ability.

WHAT ARE STUDENT FINANCIAL PROBLEMS?

In the sections dealing with educational and vocational problems, it was obvious that counselors must rely heavily on test or other quantitative data in the diagnostic process. By way of contrast, counselors have to identify financial problems without the aid of tests or other numerical devices; instead, they must depend on the interview and other sources of non-test information. (When thus used, the interview is primarily a fact-finding or judgment-making device; its effectiveness as such is governed by the principles outlined in Chapter 6.)

Three specific financial problems are commonly observed among students—the student's outside work, the financial status of his family, and his temporary financial limitations.

Outside work. The first financial problem deals with outside work. It is generally believed that outside work may lower a student's grade record. According to most of the adequate research studies, however, students who carry an outside work

load which is not excessive earn as good marks as students of similar ability who do not do outside work. Therefore, the wise counselor does not jump to the conclusion that outside work for pay or for family assistance will automatically impair a student's marks. If a student who is working outside appears to be earning marks below his capacity, he can be encouraged to keep a time record. He can use this record to set up a time budget that may aid him in improving his academic work. Even though outside work may not be impairing a student's marks, it may be creating problems in other aspects of his adjustment, such as social life, health status, or personal attitudes.

Family status. The second financial problem relates to the status of the student's family. Family finances may appear to be imposing serious limitations on a given student's educational-vocational plans. If so, the counselor needs to get evidence about the family's financial condition and about the student's present earnings or potential earning power. This evidence may definitely show that the student does not have the economic resources for further education, even though he is otherwise a promising candidate for such training. Unless this student obtains the finances required for such training, he may later face the disillusionment and frustration that accompanies the use of high-level abilities on low-level jobs.

Temporary financial limitations. The third financial problem, less severe than the second, concerns temporary financial limitations upon the student's educational-vocational plans. Through family help, his own earning power, or both, a student may be able to see his way through part of a post-high-school training program, but to complete this program he will probably require outside financial assistance.

In identifying a student's financial problem, the counselor must employ common sense including tactful questioning in the interview. He must also collect and organize factual information about the expenses involved in going to college or to another type of post-high-school training institution, and about the possibilities of obtaining part-time employment while in training.

Any teacher or counselor who can manage his own personal finances can be helpful to students in their efforts to

finance post-high-school education. To render such assistance, he must be ready and able to get correct, complete, and up-to-date information on expenses, scholarships, community financial aids, and part-time employment opportunities. Many of the sources of such information are listed by Baer and Roeber in their book, *Occupational Information*.¹⁰

WHAT ARE PHYSICAL OR HEALTH PROBLEMS?

Because teachers and counselors have not had medical training, they should not attempt diagnosis in this area of student behavior or adjustment. Nevertheless, they must be continually on the alert for signs or symptoms of health problems. These symptoms include extended or repeated absences from school, frequent colds, listlessness, rapid exhaustion, extreme nervousness or worry, marked underweight or overweight conditions, hearing difficulties, and visual difficulties. These symptoms are some of the many possible clues or signs to watch for. When the counselor observes such symptoms, he should always inform the school nurse, the school administration, or the student's parents.

After a student has had a medical examination, the teacher or counselor should secure from the physician all the facts revealed by the diagnosis and all the facts about recommended treatment that bear on the student's educational and vocational activities. The physician will probably give these facts in technical medical terms, that is, in terms of the etiology, diagnosis, and prognosis of that student's illness or disability. Therefore, the counselor must be able to translate these facts into common terms so that he can discuss them with the student and his parents. He must also be able to see exactly what these facts mean in terms of the student's activities and program.

The Values of The Physical Demands Approach

Because counselors must often take the initiative in applying physicians' reports to a student's activities, they should become familiar with certain medical terminology and with the implications of diseases and other physical disabilities. In this

¹⁰Max F. Baer and Edward C. Roeber, *Occupational Information: Its Nature and Use* (Chicago: Science Research Associates, 1951).

FIGURE 21
PHYSICAL CAPACITIES FORM

BAR MANPOWER COMMISSION
BUREAU OF MANPOWER UTILIZATION
PHYSICAL CAPACITIES FORM

Name _____ Sex _____ Age _____ Height _____ Weight _____

PHYSICAL ACTIVITIES		WORKING CONDITIONS	
1 Walking	16 Throwing	51 Inside	66 Mechanical Hazards
2 Jumping	17 Pushing	52 Outside	67 Moving Objects
3 Running	18 Pulling	53 Wet	68 Cramped Quarters
4 Balancing	19 Handling	54 Cold	69 High Places
5 Climbing	20 Fingering	55 Sudden Temp. Changes	70 Exposure to Burns
6 Crawling	21 Feeling	56 Humid	71 Electrical Hazards
7 Blinding	22 Talking	57 Dry	72 Explosives
8 Turning	23 Hearing	58 Wet	73 Radiant Energy
9 Bleeping	24 Seeing	59 Dully	74 Toxic Conditions
10 Crouching	25 Color Vision	60 Dirty	75 Working With Others
11 Unloading	26 Depth Perception	61 Odors	76 Working Around Others
12 Lifting	27 Working Speed	62 Noisy	77 Working Alone
13 Reaching	28	63 Adequate Lighting	78
14 Lifting	29	64 Adequate Ventilation	79
15 Carrying	30	65 Vibration	80

Blank Space = Full Capacity;

✓ = Partial Capacity;

g = No Capacity

May work _____ hours per day _____ days per week. (If TB, cardiac or other disability requiring limited working hours).

May lift or carry up to _____ pounds.

Details of limitations for specific physical activities _____

Details of limitations for specific working conditions _____

Date _____

Physician _____

connection, they should carefully study the "physical demands approach" originated by the United States Employment Service. The best single reference on the technique of this approach is *Selective Placement for the Handicapped*.¹¹

The physical demands approach was widely used by the Bureau of Manpower Utilization of the War Manpower Commission. On its Physical Capacity Form, reproduced in Figure 21, a person is rated as to his capacity to perform 27 different physical activities, such as walking, jumping, and running. He is also rated on his fitness for work under 27 conditions, such as inside, outside, hot, and cold.

If such a physical activities form is used by a school, the ratings of a student should be made by a physician. If that is impossible, the ratings may be made by the counselor himself, these ratings being tentative judgments subject to later checking. As one check the counselor can refer to Part II of *Selective Placement for the Handicapped*; this part discusses a number of specific disabilities and their probable limitation on vocational activities. This reference can serve as a basic guide to the physician as well as to the counselor in making ratings which are related to the physical demands of occupations.

Identification of Physical Handicaps

Counselors find it relatively easy to recognize gross disabilities such as amputations, total blindness, and the like. But they find it harder to identify disabilities that are less obvious. To discover the latter, the counselor during fact-finding interviews can ask a student such a question as, "Are there some things you feel you can't do because of your physical condition?" The counselor can also examine the cumulative record of the student. This record may reveal that the student had attended special classes such as sight-saving, lip-reading, or speech correction. If so, the counselor should try to find out why the student attended such a class and what the present status of the student's physical condition is.

If the student is retarded in school, the counselor may discover that this retardation is due to a previous illness which

¹¹U.S. Employment Service, *Selective Placement for the Handicapped* (Washington: Government Printing Office, Revised, 1945).

has permanently affected that student. The cumulative record may show that the student has not participated in sports or a physical education class. The reason for his non-participation may be a physical limitation. If the record indicates that the student is not achieving at his expected level, this underachievement may be due to a physical handicap, such as a deficiency in hearing or vision, or arrested tuberculosis. Such clues as these are described and elaborated in the handbook on selective placement for the handicapped.

Approach to Physical Disabilities

The counselor's approach to physical disabilities should be positive and individual, as is emphasized in the following quotation:

a. Positive

This approach emphasizes the specific capacities of workers rather than their handicaps by pointing out what a worker can do rather than stressing his limitations and what he cannot do. All workers therefore may be looked upon from the same point of view, namely, as possessing various degrees of physical capacity for work, not as being able-bodied, or not able-bodied.

Too often in the past, workers have been classified on the basis of their disabilities or at best as being suitable for light, moderate, or heavy work. None of these generalizations tell what a worker's specific capacities are.

The positive approach subordinates references to the negative features or handicaps of the workers. The word "handicapped" may even eventually be forgotten.

b. Individual

The physical demands approach deals with all workers as individuals rather than as groups brought together under the heading of a common disability. It is axiomatic that two people with identical physical disabilities (e.g., loss of hearing, glaucoma, arrested tuberculosis) may make entirely different adjustments to the disability; thus it is meaningless to generalize.

This points up the shortcomings of lists of jobs suitable for any group of the handicapped, such as a list of jobs suitable for workers with rheumatic heart disease. Due to the basic variation in the capacities of individuals in any disability group, lists of suitable jobs for such groups have little value. They may even be harmful in that a person not well adjusted to his disability may not be able

to meet the demands of a particular job on the list and in that the interviewers may neglect to consider some applicants for jobs not on the list. Obviously, no list can be exhaustive and so a tendency to rely on a list may militate against the best interests of many an applicant.¹²

Keeping this approach in mind, the counselor should rely for guidance upon the many excellent publications which spell out the physical capacities demands of different occupations.¹³ He also should draw upon the best source of such information—namely, the public employment service office in or nearest his community.

To recapitulate, if a student has a physical disability which limits or eliminates certain occupational opportunities for him, the teacher and counselor must know and use this information. By doing so, they help him to plan wisely his educational and vocational future.

WHAT ARE SOCIAL OR PERSONAL PROBLEMS?

The symptoms and causes of social or personal problems, like the problems themselves, are varied and often confused. For this reason, counselors find it difficult to assign correct and meaningful labels to such problems. Because problems in the fields of personal adjustments and personality traits are so complex, it is hard to categorize them. Yet, among such problems, certain ones are relatively clear-cut or specific.

1. *Oversocialization.* Here is a student who appears to be oversocialized. He makes an extremely high or "good" score on a test of social adjustment. He participates in a wide range of activities, both organized and unorganized. He seems to be spreading himself too thin. The counselor should try to estimate *how much* activity beyond the average becomes a problem, and *for what* future adjustments the oversocialization is dangerous. If, for instance, the individual's marks are pulled down by oversocialization, the problem is immediate; its harmful effects can be seen in the individual's present adjustment.

¹²*Ibid.*, p. 6.

¹³United States Employment Service, *National Physical Demands Information Series, Number I: Apprenticable Occupations* (Washington: Government Printing Office, May, 1945).

Beyond that, however, what is the effect of oversocialization? Generally speaking, the danger is that in the future the individual's job adjustment may be affected unless he or she settles down.

2. *Undersocialization.* This problem is probably more serious than oversocialization. Here is an undersocialized student who makes an extremely low or "poor" score on a test of social adjustment. Personal documents, observations, and interviews all reveal (a) that he almost never participates in social activities, (b) that he is very shy in and out of the class room, and (c) that he isolates himself most of the time. This student's problem of undersocialization may be a symptom of or a clue to his feelings of shame or inferiority about poor family background, personal appearance, physical disabilities, or inability to compete successfully in academic and extracurricular situations. Or, his problem may be a symptom of his retardation in social development, the cause of which can be corrected by gradually helping him to learn skills in social situations. Toward acquiring such skills, the student may find it helpful to study such pamphlets as *Growing Up Socially*¹⁴ and *Getting Along with Others*.¹⁵

In dealing with the undersocialized student, teachers and counselors must avoid trying to push him into "activities" by obvious or subtle means. If his undersocialization arises from feelings of shame or guilt, such adult pressures only intensify his problem; they do not help him solve it.

In this regard it is important to note that several research studies on student participation in extracurricular and social activities reveal this common finding: Unless all students are forced into activities, a minority of the students participate in the majority of possible activities; this minority is made up of the students who appear to be best adjusted to begin with and who therefore least need the benefits to be gained from such participation. In other words, well-adjusted students tend to seek out activities. Even in those schools so "activity-conscious"

¹⁴Ellis Weitzman, *Growing Up Socially* (Chicago: Science Research Associates, 1950).

¹⁵Helen Shacter, *Getting Along with Others* (Chicago: Science Research Associates, 1949).

that all students are obliged to participate, it is likely that participation is helpful only for those whose undersocialization is a problem of retarded social development; for students whose undersocialization stems from basic problems of personal adjustment, required participation is probably a painful and difficult experience.

3. *Attention-getting.* This is an appropriate label to use in describing the actions of students who are basically unsure of themselves or who feel insecure in their adjustments. Through attention-getting behavior, many of these students attempt to compensate for their feelings of insecurity. Such behavior is often of a socially undesirable or unacceptable type. It is displayed in different ways, such as aggressiveness or bullying; unusual dress, speech, or mannerisms; and "cockiness" or boastfulness, including the telling of "tall stories."

The attention-getting student may come from a home where there is considerable parental friction. He may be failing to get the recognition he wants because he is unable to compete successfully in acceptable activities, such as earning good marks or acquiring appropriate social skills. These failures may lead him into truancy or even delinquency.

4. *Over-reacting.* If the counselor observes any evidence of *over-reacting* to daily situations on the part of a student, this is another clue to an emotional or personal problem. Normally most students worry a little about their social mistakes, their health, criticisms of their behavior, or their future. Typically they are pleased by small successes, compliments, and other satisfying experiences. Some students, however, become excessively depressed, irritable, anxious, worried, moody, excited, or elated over daily happenings. When these students behave so, they are over-reacting to situations, sometimes without apparent cause. These symptoms, it should be noted, are frequently indicative of *emotional* problems.

Suggested Techniques of Diagnosing Personal or Social Problems

Chapter 14, it will be recalled, suggested that the counselor add personality testing last to his guidance testing program. Scores from such tests may tell little or nothing about the

causes of emotional problems, but they can reveal symptoms of such problems. Similarly, rating scales or anecdotal records can highlight the personality factors that may bear upon these problems. Interviews, moreover, can throw light on emotional maladjustments. In the interview, for example, the counselor must be alert to all the student's responses that may indicate emotional turmoil. He can also question the student tactfully and often indirectly in an effort to get him to discuss the problem that is upsetting his emotional stability.

Need for knowledge and skill. Because human personality is so complex, any discussion of it is likely to be somewhat diffused and cloudy. One reason for this is that *standards* of good or of poor adjustment are not well defined. Another reason is that it is difficult to separate symptoms and causes. For these and other reasons, skill in diagnosis of students' emotional problems requires considerable knowledge of the psychology of adolescence and of the psychology of personality—much greater knowledge than is possessed by persons who are not specially trained.

Discussing the student's problem. In dealing with persons who have severe or deep-seated maladjustments, the clinician must have great skill. Even though the counselor may have only a modicum of diagnostic skill, he must at least attempt to identify such emotional problems. In doing so, he must make sure (1) that he does not harm the students by dealing with their symptoms only, and (2) that he identifies the students needing psychiatric help.

In working with an emotionally-disturbed student, the counselor should seldom if ever discuss that student's personality problem with other members of the school staff. To this rule there are only three exceptions: (1) If the student is so disturbed that he may harm himself, the counselor must reveal the seriousness of the problem to those who have responsibility for the student's welfare. (2) If the counselor has the necessary skill to assist the student with an emotional problem, he may discuss the problem with professional colleagues in order to plan a beneficial course of action for that student. (3) If the student gives his permission, the counselor may ethically reveal the problem to others who can assist the student.

Whatever the counselor's impressions or judgments about the nature and causes of a student's personality problem, the counselor should not discuss this problem unnecessarily. If he does so, the student may become "typed" as a "problem child," and this typing may seriously harm him.

Occasionally the counselor will interview a student who appears to have a serious personal or emotional problem. In that case, the counselor should assist the student to understand why help from a psychological or medical specialist should be obtained and how such help can be secured.

WHAT ARE FAMILY PROBLEMS?

Growing up and learning to adjust to the greater independence of late adolescence is a process which sometimes creates student-family conflicts. Parents cannot understand why their older children do not obey as they used to; older children cannot understand why parents continue to treat them as youngsters.

Parents, of course, have certain inescapable responsibilities such as enlisting the child's co-operation in family life, checking on his choice of companions, watching over his moral behavior, allocating his spending money, and getting him to do his homework. As parents are trying to meet these responsibilities, their child may feel that he is being nagged or criticized unduly if not unjustly. When this occurs, it is not surprising that such a student is upset or disgruntled by his home situation.

Other student-family problems may involve rivalry with brothers and sisters, emotional friction between parents, or unemployment of the breadwinner. These problems add to the "normal" problems of growing up; they tend to make the child feel uncertain and insecure in the adult world which he still understands only partially and vaguely.

Personality tests and inventories of home adjustment; interviews and reports and anecdotes from others; and home visits and other contacts with parents—all are methods of identifying family problems. A few of these problems, particularly those of a conflict-producing type, are described here.

Parental domination. In a well-intentioned attempt to protect the child until maturity, a family may dominate his occupational choice; it will insist that he prepare for or enter a certain field. In such a case, the family rather than the child must be reached in an effort to bring about a more appropriate vocational choice.

Parental discrimination. In attempting to motivate their child, parents may constantly compare him unfavorably with a more gifted and more effective brother or sister. Through such a comparison, whether parents realize it or not, they are increasing the feelings of inferiority on the part of their child. As a result, he does poorer rather than better schoolwork. As another outcome, the child feels, rightly or wrongly, that he is not as well liked or well treated by his parents as are his brothers and sisters.

Parental control of sons vs. daughters. Because social custom permits greater freedom to boys than to girls, parents often make special efforts to see that boys do not abuse this freedom. In reacting to parental supervision, boys may often complain that parents are always criticizing the company they keep, their late hours, the way they spend money, and the little studying they do. Whether parents recognize it or not, their nagging or scolding is one of the poorest ways to help children during the transition from childhood dependence to adult independence.

Granted lesser freedom than boys, girls show more of a tendency to remain overdependent on their parents. This overdependence tends to keep these children "out of trouble," but when prolonged unduly, it may mean that parents are not giving their daughters sufficient responsibility along the road to adult independence.

Parental friction. In some families, the parents themselves are not happily or adequately adjusted to each other. As a result, the child may also feel insecure, unloved, ashamed, or guilty, and may therefore develop undesirable personality traits.

The reactions of certain children to family conflicts may follow a vicious circle—open rebellion, punishment, resentment, more open rebellion, further punishment, and greater resentment. The rebellion may flare up over such matters as

finances, educational or vocational plans, religious observance, strict and restricted social life, standards of conduct, or personality clashes of differing temperaments. While conflicts that become rebellions occur in only a minority of families, the counselor must be on the lookout for such conflicts.

In all parent-child relations, the wise counselor can see the inevitable differences between two generations. The cave man and his mate probably wondered about "what the younger generation is coming to." And their teen-age offspring probably wondered "why parents are so old-fashioned." What was true then is also true now—parents and children still wonder about each other. When these inevitable youth-versus-adult differences become extreme, a referee is needed. The counselor sometimes becomes that referee; he helps the two generations to understand, to agree upon, and to abide by the rules for happy and successful family living. In dealing with family problems, the counselor must be acutely aware of the limitations of his skills. Because family problems may be deep-rooted and long term in nature, he may well refer the child and his parents to a psychological or medical specialist.

SUMMARY

In this chapter, the process of identifying or diagnosing student problems has been shown to demand a wide range of skills, from those involving sensible inferences based on numerical data to those involving best guesses based on subjective information. As suggested in previous chapters, discrepancies between test scores and subjective estimates often throw light upon the presence and nature of educational or vocational problems. These discrepancies, moreover, serve as one important basis for making reliable and valid judgments. If judgments about the presence and nature of personal or family problems are to be sound, however, these judgments must be based largely upon descriptive, non-numerical information collected in the process of studying the student. Though more caution must be exercised in the latter type of judgment, both types are necessary in working effectively with a student. Whatever the judgment is, it can be improved if it is based on data collected and interpreted by the methods described in this book.

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